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Some Relationships Among Unit Subsystem  
Characteristics, Unit Task Characteristics,  
and Unit Effectiveness: Final Report

Anne Moeller  
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SOME RELATIONSHIPS AMONG UNIT SUBSYSTEM  
CHARACTERISTICS, UNIT TASK CHARACTERISTICS,  
AND UNIT EFFECTIVENESS

by  
Anne Moeller



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## **ABSTRACT**

**Title of Dissertation:** Some relationships among unit subsystem characteristics, unit task characteristics, and unit effectiveness

**Anne Moeller, Doctor of Philosophy, 1988**

**Dissertation directed by:** Professor Benjamin Schneider  
Department of Psychology

This dissertation examines the relationships among three sets of variables: the task structure of a job, the characteristics of the setting in which the job is embedded, and work unit effectiveness. The theoretical foundation used in this research was suggested by Roberts, Hulin, and Rousseau (1978), which was based on Lewin's (1951) field theory. It was proposed that the way the job is done mediates the relationship between the characteristics of the work unit and customer satisfaction (the index of work unit effectiveness used in this dissertation).

First, it was hypothesized that if customer contact and repair tasks are done, then the work unit will be judged to be effective. In addition, the way these two task facets combine to influence customer satisfaction was examined. Second, it was proposed that the characteristics of the setting influence the way the job gets done. It was hypothesized that personnel policies would have a major effect on how the work is performed.

The research was conducted in a national service

organization and involved 272 job incumbents and 41 supervisors. Sixty-one different work groups were represented, but only 39 work groups had complete data. Job analytic procedures were used to collect task and work setting information. Supervisors provided subjective evaluations of their work group's effectiveness. Customer satisfaction reports, collected by management, were also provided to the researcher.

The data partially supported the hypotheses. The performance of customer contact tasks was positively related to customer satisfaction reports ( $r = .42$ ,  $p < .05$ ) but unrelated to supervisory ratings. The performance of repair tasks was positively related to supervisory ratings ( $r = .34$ ,  $p < .05$ ) but unrelated to customer satisfaction reports. The practice of good personnel policies was positively, and significantly related to both types of tasks ( $r = .38$ , with CONTACT, and  $r = .30$ , with REPAIR). The full model was not supported by these data.

The discussion and conclusions focused on management's role in designing jobs and establishing other policies practices, and procedures that facilitate good customer service.

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## INTRODUCTION

The purpose of this dissertation is to explore the relationships among the task structure of a job, the characteristics of the setting in which the job is embedded, and work unit effectiveness. It continues a line of research designed to assess the events and conditions in the work place that facilitate or inhibit effective work unit performance (see the companion works of Schoorman & Schneider, 1986; Moeller, Schneider, Schoorman & Berney, 1986; and Schechter, Moeller, Schoorman & Schneider, 1986). The operating hypothesis of the research program on which this dissertation is based (it is essentially a "climate for service" research program) is that management's policies, practices, and procedures facilitate and/or inhibit organizational work unit effectiveness.

This dissertation introduces an additional variable to the proposed model of work unit effectiveness. This additional construct, the task structure of a job, is proposed to function as a mediator of the relationship between the characteristics of the setting (i.e., management's policies, practices, and procedures) and work unit effectiveness. It is hypothesized that local management gives shape to the task structure of a job through their choice of the policies, practices, and procedures that support and reward task performance. In other words, the setting influences the task structure of the job which, in turn, influences work unit effectiveness.

The theoretical perspective used in this research borrows heavily from Lewin's (1951) "field theory" framework for understanding the relationships between a person, the environment, and his/her behavior; namely, that  $B = f(P, E)$ <sup>1</sup>. In this study, though, the unit of analysis is the job that people in an organizational work unit perform rather than a person. Roberts, Hulin, and Rousseau (1978) provided an adaptation of Lewin's work that suits this research fairly well:  $R = f(U, E)$ . Their two changes to Lewin's equation, Responses instead of Behavior and Unit instead of Person, reflect a broadening of the framework. "U" is substituted to emphasize that the responding unit can be other than a person. In this case, U is the job that people, in general, do. "R" is substituted to show that other responses (such as attitudes or departmental effectiveness), as well as behavior, are appropriate for study.

For purposes of this dissertation, the task structure of a job is defined as the stable or recurring behaviors resulting from role enactment of all the job incumbents in an organizational work unit (Allport, 1962; Katz & Kahn, 1978; March & Simon, 1958; Weick, 1979). Current practice in job analysis implies that identically titled jobs are similar, if not identical, across all organizational work units. Similarly titled jobs may serve the same intended function across all organizational units but specific tasks allocated to these jobs in order to accomplish that function may not be the same. Contrary to accepting the

assumption of task uniformity of jobs across organizational settings, then, this dissertation attempts to demonstrate that there are important differences in the task structure of a job and that these differences are related to differences in the setting in which the job is embedded.

Further, it may be argued, failure to consider the effects of the characteristics of the setting on a job may have a detrimental influence on many Human Resources practices as well as on the later performance effectiveness of job incumbents. For example, training specialists are encouraged to incorporate specific aspects of the work setting (including the way the tasks are to be performed) into their training programs in order to facilitate the transfer of learning from the training environment to the actual work environment (Goldstein, 1987). Without incorporating specific information about the setting into the design of training programs, what people learn in training may not readily transfer to the work setting.

Some of the literature on organizational design also address the issue of task uniformity within the "same" job. Task requirements clearly exert some pressure for the patterning of activities that make up a job (Katz & Kahn, 1978), but local happenstance also influences the task structure of a job (McCormick & Tiffin, 1974; Prien & Ronan, 1971; Schneider, 1980). McCormick (1976, p. 431), for example, stated that local management has discretion in the design of the task structure of jobs:

Although the specific activities of some jobs are virtually predetermined by the objective to be achieved, perhaps most typically there is opportunity to "design" jobs, and thus to choose, from among various possible options, that option which seems best in terms of some appropriate criterion (such as time or personnel costs).

This dissertation, then, explores the set of organizational arrangements--which include the range of structures, processes, methods, procedures, and so forth--that local management explicitly and formally develops to get people to perform tasks consistent with their interpretation of organizational strategy (Nadler & Tushman, 1980) and that also affects how the work that needs to be done is accomplished. Moreover, the effect of how the work is accomplished (in this dissertation, the task structure of the job) on work unit effectiveness is explored.

## LITERATURE REVIEW

### Conceptualization of the job.

Organizations are contrived social systems which are "anchored in the attitudes, perceptions, beliefs, motivations, habits, and expectations of human beings" (Katz & Kahn, 1978, p. 37). More stable forms of organizing emerge from their more "primitive" precursor forms when a system of impersonal rules replaces the spontaneous cooperative responses of the people involved; people initially cooperate with each other because of their

common needs and expectations. This "system of impersonal rules" is a device of control used by organizations to reduce the variability of human behavior and to produce stable patterns of behavior (Katz & Kahn, 1978; March & Simon, 1958). Furthermore, these patterns of behavior are thought to represent something that is enduring and that is part of the organizational system itself (Allport, 1962; Porter & Lawler, 1965; Weick, 1979). In other words, these patterns of behavior are assumed to continue unaltered when individual members of the organization leave and others are added to refill the vacant positions.

Formal organizations are typically defined as complex social systems (Zedeck & Blood, 1974); they are goal-directed and they achieve these goals through a division of labor:

An organization is the planned coordination of the activities of a number of people for the achievement of some common, explicit purpose or goal, through division of labor and function, and through a hierarchy of authority and responsibility (Schein, 1980, p. 15).

March and Simon (1958, p. 22) described the process of organizing as one of parcelling tasks to organizational members in order to achieve the organization's goals:

Given a general purpose for an organization, we can identify the unit tasks necessary to achieve that purpose... In the organizing process each

department is viewed as a definite collection of tasks to be allocated among, and performed by, the employees of the department.

Prien and Ronan (1971, p. 92) further suggested that the particular arrangement of tasks is largely a function of "custom and convention, local option, extra job or individual conditions, and simply accidents of the moment."

Tasks are discrete actions that organizations require their members to perform. In the parlance of job analysis, "a task is a distinct work activity carried out for a distinct purpose" such as sweeping a floor, typing a letter, or taking a customer's order (Cascio, 1982, p. 50). Furthermore, a collection of related tasks defines a duty, a collection of related duties defines a position, and a collection of positions that are similar in their significant duties defines a job. For purposes of this dissertation, a job is a pattern of activities--a collection of tasks--that is performed by a number of people within a work unit and is deemed necessary for the accomplishment of organizational goals.

Katz and Kahn (1978) argued that if the internal activities of an organization are to persist, then they must acquire some degree of predictability. Formal organizations develop fairly elaborate documents (e.g., a job description) to describe the organization's expectations of what job incumbents are required to do while fulfilling their organizational roles. By clearly delineating their expectations, organizations attempt to minimize any indi-

vidual's unique contribution (in the form of changes) to the task structure of the job.

In sum, organizations attain stability in terms of the patterned recurrence of activities (or tasks) rather than in terms of the people who perform them. In other words, the organizational activities are organized, rather than the organizaional members. Furthermore, organizations attempt to gain some degree of predictability of the required activities by explicitly describing them. And, finally, once these mechanisms of control are intact, organizations seek people who can and will do these tasks and provide them inducements to ensure their cooperation (March & Simon, 1958; Schein, 1980).

Organizations are fairly effective in achieving stable patterns of activities. Researchers tend to agree that required tasks are probably one of the most salient internal organizational characteristics for determining individual responses (Child, 1973; Katz & Kahn, 1978; March & Simon, 1958; Roberts et al., 1978). Child (1973), for example, argued that the strategies of administrative control (e.g., role specification, centralization of authority) developed by management greatly influence employee behavior. Clearly defined roles, or the clear specification of the tasks to be accomplished, is one of the mechanisms he argued controls behavior in organizations.

In this dissertation, management's policies, prac-



tices, and procedures that reward and support task performance are examined. The conceptualization and measurement of both these constructs (management's policies, practices, and procedures--or the characteristics of the setting--and the task structure of a job) are discussed in the following sections.

#### Analysis of the task structure of a job.

One common approach researchers use to discover the tasks that make up a job is by conducting a job analysis. In essence, job analysis is a process of learning about a job; its component tasks, the behaviors performed, necessary worker attributes, working conditions, and the like. In an extensive review article, Pearlman (1980) described four broad categories of job analytic procedures which are commonly used to assess the features of a job:

- 1) job oriented content, which describes the work activity itself (such as the tasks that make up the job),
- 2) worker oriented content, which describes the human behaviors required to do the work,
- 3) abilities oriented content, which describes the (profiles of) knowledge, skills, and abilities required to do the work, and
- 4) overall nature of the job, which describes jobs in terms of their job titles (e.g., clerical).

While the field is fortunate for having multiple procedures to describe jobs, this choice of procedures also

creates a problem for job analysts. These different methods may yield different interpretations of the nature of the same job. And, as Tenopyr and Oeltjen (1982, p. 585) have commented, "There is no consensus on the proper method for assessing jobs."

Job analysis is a technique used to develop a comprehensive picture of a job. This picture is used as a foundation for recruitment, selection, training, compensation, and other human resources practices. There have been significant advances in the practice of collecting job information (Cornelius, Carron & Collins, 1979; Pearlman, 1980; Pearlman & Schmidt, 1981) and analyzing it (Arvey & Mossholder, 1981; Lissitz, Mendoza, Huberty & Markos, 1979; Mobley & Ramsey, 1973; Zimmerman, Jacobs & Farr, 1982), not the least of which is the realization that job analysis means different things to different people (Pearlman, 1980; Schmidt & Schneider, 1985). To evaluate, to compare and contrast, various job analytic procedures, it is necessary to define the purpose of the job analysis.

As mentioned earlier, job information can be collected at a number of different levels (Pearlman, 1980), ranging from very detailed task information to a more global job family classification. Hunter (1983) argued that grossly identifying the occupational classification of a job (e.g., bookkeeper) provides sufficient information to generalize ability test validities, such as those assessed by the GATB (Government Aptitude Test Battery). Other researchers (e.g., Pearlman, 1980; Schmidt & Schneider,

1985) have argued that information on worker attributes (and the knowledge, skills, and abilities required for performing the job) provides the best information for designing personnel selection programs. For yet another Human Resources practice, Goldstein (1987) argues that the detailed task information and information on knowledge, skills, and abilities are required to assess training needs. Finally, for the purpose of job classification, Schmitt and Schneider (1985) likewise recommended that job taxonomies be based on job-oriented content descriptions (such as tasks, duties, or general work activities).

In this dissertation, the job analytic methodology suggested by Prien, Goldstein, and Macey (1985) was used to specify the detailed task information necessary to operationalize the task structure of a job. Their method was chosen for two reasons: 1) it incorporates the positive features of several other methods (e.g., involving representative job incumbents in the process, forming the task inventory) and 2) its apparent utility in generating specific task information.

#### Factors affecting the task structure of a job.

Historically, job analytic methods assumed that jobs were not changed very much by the individuals performing them or by temporal or situation factors (Cascio, 1982). Contrary to this notion, this dissertation attempts to examine the relationship between the characteristics of the setting and the task structure of a job. Research

also indicates that jobs change over time. Buchanan and Boddy (1982), for example, noted how the job of clerk-typist has changed recently with the advent of a new technology, namely word processing. The tasks performed by typists and the abilities that are required for performance have changed, although the output (e.g., a typed document) has remained the same.

Jobs may also change with changes in personnel. Newcomers to the job may redefine it to suit their own needs and to make use of their own special competencies. Schein (1980) called this adjustment of the job "personalization" of the job. Graen (1976) argued that the jobs that organizations fill are partial and incomplete programs which must be completed or defined by newcomers to the organizational unit. In his model of the process of making and taking a role, new job incumbents attempt to "make a mark" on their new role while, in the interest of continued stability, the organization attempts to minimize their uniqueness. Roberts et al. (1978, p. 124) likewise agreed:

We must also remember that individuals alter and restructure tasks and situations to fit their abilities and personalities. Although we naively think we select individuals to perform a particular task, after a short time some jobs resemble only slightly what they were initially.

Although jobs may be "personalized" by job incum-

bents, the accumulating literatures in organizational behavior and organizational design indicates that characteristics of the larger organizational environment account for a greater portion of responses by people than do individual differences (Child, 1973; Mitchell, Note 2; Roberts et al., 1978). Within formal organizations, people have less freedom to change their roles to coincide with the expression of their personalities than in any other social setting (Katz & Kahn, 1978).

It is proposed here, then, that the task structure of a job corresponds to the characteristics of the setting in which the job is embedded. When management first organizes the activities that are required to accomplish the goals of the organization, the set of activities is described in only the most general of ways. "One of the very important processes in organizations is the elaboration of this set of activities, and the determination of which precise activities are to be performed at which precise times and places" (March & Simon, 1958, p. 26). Management assumes responsibility for this elaboration. The "critical task of the intermediate levels of management is to piece out the organizational structure, or guide subordinates to do so, in ways which optimize organizational functioning" (Katz & Kahn, 1978, p. 547). To "piece out" is to creatively embellish the organizational structure. Every supervisor functions within the limits of formal policy, but within these limits he or she adds and improvises.

The task structure of a job, it is proposed, occurs mostly as a result of choices made by management in response to local happenstance. Happenstance requires choice, and when management determines how they and their organizational unit will attain the organization's goals and objectives, some organizational structures--such as the structure of a job--will emerge for moving the organizational unit to goal accomplishment (Katz and Kahn, 1978; Prien & Ronan, 1971; Schneider, 1980). Different job structures for the "same" job may emerge in different organizational units given that 1) local management may make different choices in response to the same happenstance or 2) local management may be faced with entirely different happenstances.

In this dissertation, only the results of this series of local happenstances are captured. In other words, the changes in the task structure of a job that occur over time are not addressed. This dissertation, then, is a "one shot" study (Campbell & Stanley, 1966). Thus, the factor of time eludes investigation.

In addition, the literature implies that job incumbents are relatively less important in influencing the structure of the job than are the characteristics of the setting. Job incumbents, as individuals, are also not under investigation here.

The focus of this study is whether the result of local happenstances--as measured by differences in the

task structure of a job--is related to differences in the work settings in which the jobs are embedded. An additional concern is whether job differences are related to differences in organ-izational work unit effectiveness.

#### Conceptualization of the work setting.

This part of the dissertation, that of assessing the characteristics of the setting, builds on some earlier research on the facilitators and inhibitors of work performance (see Schoorman & Schneider, 1986). In essence, then, this dissertation is an extension of that earlier climate-for-service work.

The climate-for-service research program began with a simple and direct hypothesis: Events and/or conditions at work facilitate or inhibit unit effectiveness. Furthermore, management's practices, policies, and procedures were thought to establish and maintain these events and/or conditions. This research made both conceptual and methodological contributions to the literature.

Prior to this research, the literature on situational performance constraints was largely empirical (O'Connor, Peters, Eulberg & Watson, 1984; Peters & O'Connor, 1980), with little formal conceptual integration. To help map the conceptual domain of the focal construct of the operating hypothesis--namely, the facilitating and/or inhibiting conditions at work--the researchers adapted the Katz and Kahn (1978) subsystem model of organizational functioning. The use of this theoretical framework was one

contribution.

The Katz and Kahn model posits effective functioning in five subsystems as the necessary foundation for overall organizational effectiveness. Briefly, the five required subsystems are: 1) the production subsystem, which concerns the nature of the work that is done in the organization, 2) the supportive subsystem that functions to obtain the raw materials needed for the production process and to dispose of the completed products, 3) the maintenance subsystem which operates to ensure that the people and the equipment of the organization are capable of getting the work done, 4) the adaptive subsystem that monitors and responds to any environmental changes that might affect the production process, and finally, 5) the managerial subsystem which directs, coordinates, and controls the various activities of the organizational members. These five subsystems are not necessarily equally important for all organizations. Katz and Kahn also spoke of a "leading" subsystem. One subsystem may emerge and be most influential in the total system given the characteristics of the organization, its product or service, its technology, and its environment. But every organization, in some fashion, must attend to each of these five functions in order to achieve long-term organizational effectiveness.

As the second conceptual contribution, the climate-for-service research program was conducted at the unit level of analysis rather than at the level of the individual. The literature on organizational climate (Schnei-



der & Reichers, 1983), for example, suggests that events and conditions of the situation would have relatively uniform effects on the people working in that situation. For this reason, the researchers believed that the group level of analysis would be more appropriate for studying situational performance constraints. The focus of the research program, then, was the events and conditions that occur for the whole supervisory work unit rather than instances that are specific to any one individual.

A related methodological contribution concerned the collection of unit level information. Typically, researchers aggregate individuals' responses to represent unit level information (e.g., James & Jones, 1979; Joyce & Slocum, 1983; Schneider, Parkington & Buxton, 1979). In the climate-for-service research program, work facilitation information was collected in two ways. First, individuals' responses were aggregated and secondly, group consensus responses were obtained from the same respondents. These data were then compared and contrasted.

The results of this program of research were encouraging. Two conclusions were drawn from the results: 1) the two data collection procedures (aggregation and consensus) yield fairly similar information and 2) there is evidence that the model of work unit effectiveness is valid. In one sample, for example, all of the subsystem scales were positively correlated with work unit sales performance; three of these (Supportive,  $r = .55$ ,  $p < .05$ ; Personnel

Maintenance,  $r = .72$ ,  $p < .01$ , and Adaptive,  $r = .56$ ,  $p < .05$ ) achieved conventional levels of significance. An expanded summary of this climate-for-service research program is provided in Appendix A.

The extension. The methodology developed in the climate-for-service research program was adopted for this dissertation. The Katz and Kahn subsystem model of organizational functioning was again used to organize the specific instances of work facilitation and work inhibition that were collected from job incumbents. As in the earlier research, this collection of facilitators and inhibitors of work performance focused on the events and conditions that occur for the whole supervisory work unit.

Given that the two collection procedures, aggregating individuals' responses and obtaining the group's consensus response, yielded fairly similar data, the least labor intensive procedure was adopted in this study. While it is true that the consensus data yielded slightly higher validity coefficients than the aggregated data, costs of collecting data by consensus were prohibitive.

The work facilitation methodology was used to assess the characteristics of the setting in the present study. This dissertation extends the previous research by suggesting that the task structure of a job mediates the relationship between the characteristics of the setting and work unit effectiveness. The setting, or rather the policies, practices, and procedures that management chooses to administer, influences the task structure of a

job. However, it is really through the job--the way that the job is structured--that work units are effective. The general model of these relationships is as follows:

WORK UNIT SETTING  
(MANAGEMENT'S POLICIES, PRACTICES  
AND PROCEDURES)



TASK STRUCTURE OF A JOB



ORGANIZATIONAL WORK UNIT  
EFFECTIVENESS

## HYPOTHESES

This dissertation adapts Lewin's field theory, in particular his  $B = f(P,E)$  formulation, to help explain one aspect of organizational work unit effectiveness. Organizational effectiveness is an external standard of how well the organization is meeting the demands of various constituents (e.g., management, stockholders, customers, the workforce, the local community) that are concerned with its activities (Pfeffer & Salancik, 1978). Effectiveness is assessed by each of the various constituencies and their judgments may conflict. The conflict arises when different constituents use different criteria to judge effectiveness; for example, what stockholders judge as effective (e.g., high return on investment) may not correspond to what the workforce judges as effective (e.g., improved quality of working life). Pfeffer and Salancik (1978, p. 37) resolved this difficulty by noting: "Since there are conflicting criteria, effectiveness is inevitably inevitably defined only with respect to the assessment of a particular group." In this dissertation, customer satisfaction--how satisfied the customers are with the service they receive--is the index of organizational work unit effectiveness.

Using the adapted framework presented by Roberts et al. (1978), i.e.,  $R = f(U,E)$ , the following relationships are Hypothesized: work unit effectiveness is a function of both the task structure of a job and the characteris-

tics of the setting in which the job is embedded. This hypothesis provides general direction and indicates that it is important to look for diversity in both the job and the setting as a strategy for understanding work unit effectiveness. Furthermore, it is possible to formulate more specific testable hypotheses while still conforming<sup>2</sup> to the general conceptualization.

This dissertation was conducted in a service organization. The emerging literature on services marketing (Berry, 1980; Shostack, 1977; Uhl & Upah, 1983) helped to identify particular features of both the job and the setting that may have consequence for the work unit effectiveness criterion used here--customer satisfaction. Much of the writing in services marketing, however, has been concerned with building the argument that services are different from products and that these differences necessitate special marketing considerations (Uhl & Upah, 1983). Currently, there is a dearth of empirical research in the services marketing literature.

With respect to the differences between services and products, Berry (1980) argues that the typical market offering is a combination of both product and service components. He (1980, p. 78) described the differences between the two components as follows: "A good is an object, a device, a thing; a service is a deed, a performance, an effort. Although the performance of most services is supported by tangibles, the essence of what is bought is performance rendered by one party for another." The four jobs

involved in this dissertation--which will be described in more detail later--all deal with the repair and maintenance of electronic equipment. Based on Berry's classification system, the jobs are largely service jobs.

There are several more elaborate classification schemes which differentiate products and services than the one presented by Berry (Bateson, 1979, Gronroos, 1982, Schneider & Bowen, 1984; Uhl & Upah, 1983). Schneider and Bowen (1984) identified the following three characteristics as commonalities among the different schemes:

- 1) the output of service organizations is intangible,
- 2) services are produced and consumed simultaneously, and
- 3) customers often participate in the delivery of services.

These characteristics, and especially the first one listed (Bateson, 1979), have important consequence for the task structure of customer service jobs.

#### Facets of customer service jobs.

The services marketing literature identifies two important facets of customer service jobs. These facets are: 1) the delivery of the service and 2) the production of the service. Neubauer (1985) suggested that attention to the first facet, that of service delivery, may yield service organizations a "competitive edge." While the production of services is essential in any services organ-

ization, service technologies are easily copied and few protections (e.g., patents) are available to preserve a market advantage. Consequently, how the service is delivered to the customer assumes more importance. These two facets of customer service jobs are discussed below, with special attention to the first facet, service delivery.

Service delivery. In the extreme, services are intangible; they cannot be touched or felt. This feature of services, in particular, highlights both the importance of customer contact personnel and the importance of what they do while serving the customer (e.g., Bateson, 1979; Berry, 1980; Bowen & Schneider, 1985; Gronroos, 1982; Schneider & Bowen, 1984). Gronroos (1982, p. 5-6) argued that as the service becomes more intangible, how the service is delivered is what the service is to the customer:

The consumer is not only interested in what he receives as an outcome of the production process, but in the process itself. How he gets the technical outcome--or technical quality--functionally, is also important to him and to his view of the service he has received.

Berry (1980) agreed that this aspect of service, its intangibility, requires management to focus on customer contact personnel when developing strategies to improve service quality.

This literature suggests, then, that one critical

facet of a service job is the customer contact tasks that people in the organizational work unit perform. The first hypothesis of this dissertation, which identifies a particular structural feature of the job, is:

Customers report more satisfaction with the service they receive when the jobs are structured for the performance of more customer contact tasks.

The notion of this hypothesis is that customers will be more satisfied with the service they receive when the customer service job has a service delivery orientation; and has this orientation despite the additional non-contact duties of the job.

Jobs typically have multiple duties. Duties, which are sets of related tasks, describe the major responsibilities of a job. In these service jobs, among other duties, job incumbents are responsible for obtaining and providing information from/to the customer, providing information to other departments in the company, maintaining customer records, and analyzing the reported customer trouble. The first hypothesis, then, states that the task profiles of a service job, where management emphasizes service delivery, will be different from the task profiles of a service job, where management does not emphasize service delivery. When management emphasizes service delivery, the performance of customer contact tasks (e.g., call the customer to keep him/her informed about the progress in repairing the equipment, call the customer to



verify whether the equipment has been repaired) will be expected, rewarded and supported. In other words, when managers of work units emphasize service delivery, relatively more time will be spent in contact with the customer. Furthermore, customers will report more satisfaction when they are served by job incumbents who spend relatively more time performing customer contact tasks.

Service production. Customer contact tasks focus on the process, the how, of service delivery, rather than on the production of the service (such as in this dissertation, the actual repair of the electronic equipment). But, as Gronroos (1982) has mentioned, what customers receive as an outcome of the service delivery process also influences their evaluation of the service. In other words, there may be other non-contact tasks involved in providing customer service. They are the substantive, or technical, tasks related to customer service (Hammer, 1985). Substantive tasks for the jobs involved in this dissertation would be the service production tasks--those tasks that are directly related to the repair and maintenance of the electronic equipment. They would include such duties as 1) analyzing the trouble, 2) testing to locate the trouble, and 3) resolving the trouble. Another critical facet of the service job in this dissertation, then, is the repair tasks that the job incumbents in the organizational work unit perform. The second hypothesis of this dissertation is:

Customers report more satisfaction with the service they receive when jobs are structured for the performance of more repair tasks.

Hypotheses One and Two, combined, suggest that these two facets of customer service jobs (the performance of customer contact tasks and the performance of repair tasks) each contribute to customer satisfaction. Furthermore, these hypotheses suggest that customer satisfaction will be individually positively correlated with the performance of more repair tasks. In other words, the hypotheses suggest that these two facets of service jobs, in linear combination, would yield the strongest relationship with customer satisfaction. However, the relationship between these two facets of customer service and customer satisfaction may be accounted for by a competing hypothesis. It is possible, for example, that a customer contact orientation is incompatible with a repair orientation; that people in a work unit cannot maintain both orientations.

The delivery of service may provide organizations a competitive edge, as Neubauer suggested, but service delivery assumes that a service can be performed. The competing hypothesis suggests that the performance of repair tasks is a necessary precondition for service delivery to have an effect. In other words, the customer contact facet of service may only be important when the repair portion is already being accomplished. Combining the two task facets, then, yields two competing hypotheses--

**Hypotheses Three and Four. Hypothesis Three becomes:**

**Customers will report more satisfaction with the service they receive when jobs are structured for the performance of more customer contact tasks and the performance of more repair tasks.**

**In contrast, Hypothesis Four becomes:**

**Customers will report more satisfaction with the service they receive when jobs are structured for the performance of more customer contact tasks if, and only if, the jobs are also structured for the performance of more repair tasks.**

**Hypothesis Four provides a further refinement of the proposed relationship between the task structure of the job and work unit effectiveness. Hypotheses One and Three propose a direct relationship between the performance of customer contact tasks and customer satisfaction. These hypotheses are consistent with the notions promoted by Neubauer (1985), Gronroos (1982) and Berry (1980). On the other hand, Hypothesis Four proposes a more complicated relationship. This hypothesis suggests that the relationship is true only if jobs are also structured for the performance of repair tasks. Service production and service delivery may be simultaneous but, in Hypothesis Four, these two facets of service are being teased apart. The fourth hypothesis, then, suggests that a courteous repair person may not yield customer satisfaction if the repair itself is not being accomplished.**

If Neubauer, Berry, and Gronroos are correct in their thinking, however, the performance of repair tasks will add to service contact in the relationship between the performance of customer contact tasks and customer satisfaction.

Characteristics of the setting: the prediction of the nature of tasks.

The literature on service organizations is also concerned with the characteristics of the setting in which the service is produced and delivered. In the service literature, production and delivery are considered to be a simultaneous event. Service delivery, though, seems to be the primary focus of most service research. Service production is largely assumed. In any case, when exploring this issue, some researchers (e.g., Uhl & Upah, 1983, p. 239) are mainly concerned with the physical characteristics of the situation:

Customers evaluate what they can't see, i.e., the service itself, by what they can see, e.g., the location and decor of the office, the demeanor and appearance of the principal service provider.

Others (e.g., Gronroos, 1982; Schneider et al., 1979) study the organization's "climate" for service. The climate for service--management's policies, practices, and procedures that support and reward the delivery of service--created in an organization is crucial for service unit effectiveness (Gronroos, 1982; Schneider et al, 1979).

Schneider and his colleagues (e.g., Bowen & Schneider, 1985; Moeller & Schneider, 1986; Schneider & Bowen, 1984; Schneider et al., 1979) have studied the nature, antecedents, and effects of a service climate; again, the focus is on service delivery. Schneider et al. (1979) empirically derived several themes that they believe characterize climate for service. These themes include such practices and/or procedures as 1) maintaining adequate staffing levels and 2) hiring and training competent and courteous staff. In two studies (Schneider et al., 1979; Schneider & Bowen, 1984), Schneider has shown that employees' perceptions of their work unit's (i.e., bank branches) climate for service correspond to customers' perceptions of the quality of service they received from that unit. In other words, when employees report that management policies, practices, and procedures facilitate service delivery, customers report that they are more satisfied with the service they received. Based on this research, Bowen and Schneider (1985, p. 135) concluded:

When organizations treat their employees as if they are valuable customers, employees will treat customers in a similar fashion.

As a whole, this stream of research indicates that when management promotes the effective delivery of service, then their efforts will earn them more satisfied customers.

Katz and Kahn (1978) suggested that one subsystem may

emerge and be most influential in the total system. They argued that characteristics of the organization, its product or service, its technology, and/or its environment may all contribute to one subsystem assuming a "leading" role in the organization. This research on climate for service, and the services marketing literature in general, suggests that the Personnel Maintenance subsystem may be particularly important for the delivery of services. For example, Berry (1985) proposed that services organizations must attract, hire, and train quality customer contact employees. Schneider and his colleagues included these same issues in their climate for service diagnostic. The Personnel Maintenance subsystem specifically deals with these issues: "the maintenance structure develops, administers rewards, and mediates between the demands of the members and the requirements imposed by the technical structure" (Katz & Kahn, 1978, p. 87). Consistent with these ideas, then, the fifth hypothesis of this dissertation is:

Incumbents' assessment of the personnel work facilitation subsystem will be more strongly related to their customers' satisfaction reports than their assessment of any of the remaining five work facilitation subsystems.

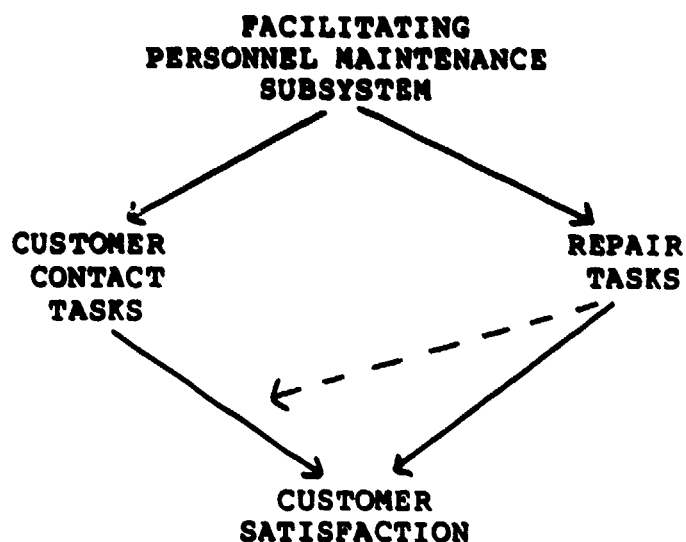
One interpretation of the model presented by Roberts et al. (1978)--namely that  $R = f(U, E)$ --suggests that the two constructs of this dissertation, the task structure of a job and the setting in which the job is embedded, are

simply and directly related to the criterion. The literature on services delivery, in particular the work by Gronroos and by Schneider and his colleagues, suggests a different arrangement of the constructs. These researchers have argued that when management facilitates the delivery of service--which is none other than the performance of certain tasks--then customers will be satisfied with the service they receive. Schneider and Bowen (1984) have even suggested that if management were to recruit, select, train, and retain competent personnel (e.g., people who can repair electronic equipment as well as interact with the customer), then further management acts of controlling these employees would be unnecessary. In other words, people who are attracted by these customer contact jobs, who are selected into the jobs, and who remain in them are naturally inclined to do their jobs in ways that give good service. Management only needs, then, to make sure that these personnel are free to do what comes naturally, which is give good service. The sixth, and final, hypothesis of this dissertation is:

When incumbents report that management's personnel policies, practices, and procedures facilitate the delivery of service, then jobs will be structured to allow for the performance of more customer contact tasks and the performance of more repair tasks.

Combining these hypotheses into one picture, the

model of the relationships between task structure of a job, the setting in which the job is embedded, and customer satisfaction is as follows:





## METHOD

### Background

The guiding research question for this dissertation required that it be conducted at the work unit level of analysis. This decision to conduct a study of work units affected the whole research effort: the conceptual formulation of the constructs involved in the study, the methodology used to operationalize the conceptual model, and the procedures used to analyze the data. Roberts et al. (1978) and others (e.g., Glick, 1985; Glick & Roberts, 1984; Mossholder & Bedeian, 1983; Schneider, 1985) stress that correspondence among these aspects of any research endeavor is essential in order to avoid making unintentional and misleading cross-level inferences.

Solutions to the problems associated with level of analysis have increasingly been proposed in the recent past (Glick, 1985; Roberts et al., 1978; Moeller et al., 1986; Schneider & Reichers, 1983). Researchers are warned to make sure that: 1) their "units of theory" (i.e., their conceptual constructs) are clearly specified, 2) their "units of observation" are consistent with their units of theory, and 3) the data analytic techniques they use are appropriate for testing their hypotheses.

The fundamental issue in any research effort is to clearly specify the research question (Ellsworth, 1977; Webb, 1961). Ellsworth (1977, p. 606) adamantly contended that "the investigator's first task is to understand what

it is that he is asking." Researchers need to select the substantive variables to be studied and to express the formal relationships between and among these variables. "Most hypotheses can be reduced to the basic form, 'Whenever X occurs, Y will happen'" (Ellsworth, 1977, p. 606). Roberts et al. (1978) further advised researchers to pay special attention to the unit of theory (e.g., individual, group, work unit, function, organization). They warned that failure to make clear the unit of theory may jeopardize the rest of the research effort. In other words, researchers who are unclear about their unit of theory run a greater risk of inadvertently mixing levels of analysis and consequently making erroneous cross-level inferences (see Glick & Roberts, 1984, for an example of erroneous inferences drawn from mixed-level research).

A second methodological issue the researcher confronts concerns the operationalization of the theoretical constructs. The unit of observation needs to be consistent with its corresponding unit of theory. This is particularly an issue when researchers ask individuals to provide information that is to represent a construct at a level of analysis different from the individual. Climate researchers (e.g., Glick, 1986; James & Jones, 1979; Schneider & Reichers, 1983) have discussed this issue in depth. They suggest that focused descriptive questions be used to generate other-than-individual level information which is collected from individuals. For example, Schneider and Reichers (1983) recommended that observations be

focused on specific organizational units with recognized boundaries and not on an ambiguous "work environment." In other words, if individuals' responses are to be aggregated to represent department level information, then people should be responding to survey items (or interview questions, etc.) that reflect this future transformation, as in "Untrained employees are being sent to this department."

Glick (1986) further suggests that people should be recruited to act as "key informants" or "subject matter experts." In other words, respondents should be asked, explicitly, to describe the relevant unit's characteristics and to not act as "individual actors revealing their unique experiences" (p. 607). Finally, Seidler (1974) suggested that respondents be deliberately chosen, rather than randomly selected, to act as subject matter experts. Seidler believes that if knowledgeable informants are chosen, then the accuracy of the measure (e.g., organizational climate) would be increased.

As a first step, then, in designing a unit level study, the researcher needs to determine whether or not the theoretical constructs chosen for study may be tapped by examining the perceptions of the unit's members as a collective. The next step is equally important. The researcher also needs to evaluate the appropriateness of the aggregation procedure. Ideally, three criteria are used to evaluate the aggregation procedure: 1) do the aggregated perceptions discriminate among the different

groups (or departments or organizations) that are assessed?, 2) do the aggregated perceptions have some predictable relationships to relevant work outcomes?, and 3) do the individuals from whom the aggregated perceptions are derived agree with each other? (Joyce & Slocum, 1983). The second criterion, predictable relationships, is formally stated as the hypotheses of this study. The other two criteria are implicit hypotheses of this study and may be evaluated by a number of statistical procedures to assess agreement; for example, intraclass correlations and within-group interrater reliability (Glick, 1986; James & Jones, 1979; James, Demaree & Wolf, 1984).

The James et al. (1984) procedure was used in this study to estimate within-group interrater reliability. James et al. argued that their procedure provides more accurate and interpretable estimates of agreement among group members. They demonstrated that other methods used to estimate agreement (e.g., intraclass correlations) were less sensitive to degrees of agreement, especially when the data are restricted in range. Range restriction is particularly likely to occur if "judges in a single group agree on responses to essentially parallel items" (p. 9). Furthermore, the James et al. procedure more specifically addressed the issue of coherence of the responses of the members within the organizational unit.

Some researchers (Glick, 1986; Joyce & Slocum, 1983) focus more on assessing the diversity of climate assessments. The practice of evaluating the between-group vari-

ance, however, may be misleading. Certain aspects of climate, or shared perceptions, may be unique to an organizational unit while other aspects may be shared in common with other, or maybe all, organizational units (Louis, 1983). In addition, relative homogeneity across the organizational units, as might be expected on some issues from different work groups within the same organization, reduces the likelihood of finding much between-group variance. And yet the aggregated measure of an organizational unit's characteristics may differentiate work groups in terms of some criterion of interest (see, for examples, Moeller & Schneider, 1986; Moeller et al., 1986).

In this dissertation, the units of theory are the job, the setting in which the job is embedded, and the effectiveness of the work unit in accomplishing one organizational goal (i.e., customer satisfaction). The units of observation are the members of a work group who hold similar positions. They were asked to provide information about both the features of the job and the characteristics of the setting. Management provided information (customer satisfaction data and/or ratings of effectiveness) on work unit effectiveness. The work group was delineated simply as all the job incumbents who report to the same supervisor. The data collected from individuals were aggregated to represent unit level data.

This dissertation was part of a larger research pro-

ject. The term "researchers" in the following text refers to the members of the project team.

Survey respondents were either incumbents (task data and work environment data) or supervisors (unit effectiveness data) of one of four jobs; all four jobs concerned the repair and maintenance of electronic equipment. These four jobs were split between two divisions of the company; two jobs were Division One jobs, the other two jobs were Division Two jobs. In both divisions, one of the two jobs was more or less that of assisting the incumbents of the other job in the repair and maintenance of the electronic equipment. The two different jobs in Division One were always geographically separate. Some of the incumbents in the two Division Two jobs shared facilities. In other words, in Division Two jobs, some of the incumbents from both jobs worked, literally, side-by-side.

One of the primary objectives of the larger research project (it was essentially a job analysis) was to identify how the job duties overlap between jobs within each division; and secondarily between jobs among both divisions. This objective had consequence for the design of the job analysis instrument. The task statements collected from all incumbents, regardless of the position held, were included in one survey. In other words, all job incumbents received the same survey.

#### Sample

Survey respondents were the employees of a large

national organization. A total of 272 usable surveys were returned, yielding a 62% response rate from a mailing of 440 surveys.

Respondents were incumbents of one of four jobs; all four jobs concerned the repair and maintenance of electronic equipment. The breakdown of respondents by jobs was as follows:

Division One Jobs:

125 "A" type Technicians (ATECH)  
70 Customer Representatives (REP)

Division Two Jobs:

30 "B" type Technicians (BTECH)  
47 Customer Clerks (CLERKS)

(The response rates for each job, respectively, were: 49%, 86%, 60%, and 60%.) Although they worked within different divisions, the ATECHs primarily differed from BTECHs in that they had responsibility for the repair and maintenance of a different set of electronic equipment. Both men (42%) and women (55%) held all of these jobs.

Job incumbents were also members of various supervisory work groups. Except for the REP job, workgroup size varied from 2 to 11 members. REP workgroups were composed of 9, 10, or 11 members. (Of course, not all members of a workgroup elected to participate in this study.) Again, except for the REP job, the workgroups were situated in various locations throughout the United States. The REP workgroups were situated in the same, central location. There were the following number of workgroups for each job type:

33 ATECH work groups,  
9 REP work groups,  
10 BTECH work groups, and  
9 CLERK work groups.

These numbers represent the sample sizes for the subgroup analyses of this dissertation. To test the proposed hypotheses, however, data from the four jobs were combined; they were combined by creating standardized scores within each job type. Once the data were standardized, difficulties matching predictor data with criterion data (these data were collected from separate sources) yielded a total sample size of  $N = 39$ .

#### Procedure

Surveys were mailed to the supervisor of each workgroup. They were asked to first review the survey (and to telephone the researchers to ask questions about any parts of the survey if needed) and then to distribute the surveys to their subordinates. (See Appendix B for a copy of the letter to the supervisors.) In this way, supervisors were asked to act as a liaison between the job incumbents and the researchers. Included with each survey given to job incumbents was a postage-paid return envelope. Job incumbents were asked to return the completed survey directly to the researchers. Along with instructions, a strategy for completing the survey in two one-hour sessions was suggested. (See Appendix C for a copy of this letter.)

Development of the task inventory. A series of six steps suggested by Prien, Goldstein, and Macey (Note 3)



was followed to develop the task inventory, including the following:

1) Determine the job(s), the site(s), and the participants to be included in the job analysis. Initially, only two jobs were targeted for the job analysis; the ATECH and REP jobs. Within the first month of the job analysis project, three more jobs were added; two of which (the BTECH and CLERK jobs) are also included in this study. Very few people held the fifth job and even fewer returned useable surveys ( $N = 16$ ); consequently this job was not included in this dissertation.

Only job incumbents with job tenure greater than 3 months were included in this study.

2) Collect and review existing documents (e.g., job description, training manuals, samples of work products) that describe the job(s). Background materials, such as training manuals and job descriptions were obtained from the organization. Three members of the organization, in particular, helped in the administration of this project. They formed the Company Liaison Team and also provided orientations concerning the jobs that were analyzed. During the orientations, they discussed how the jobs might be different given: a) where (i.e., region of the country) the job is located and b) when (i.e., day, evening, or night shifts) the job is performed.

3) Interview and observe the job incumbents; they are the subject matter experts (SMEs). Thirty-two task panels, typically composed of three, four, or five job

incumbents and one of the researchers, were conducted at 11 different company locations. At some locations more than one panel was conducted. Fourteen panels included only ATECHs, 3 included only BTECHs, 9 included only CLERKs, and 6 panels included only REPs. The first panels scheduled were longer, taking a full three hours to complete, than later panels. Later panels combined both the collection of task information as well as information on facilitators and inhibitors of work performance and took 1 or 2 hours to complete. The collection of work facilitation information about the setting is described later.

Each panel began with a general introduction to the project. Panel participants were informed about the purposes of a job analysis; they were given examples of task statements from other jobs and were told that they were going to help construct similar statements for their own job; they were told that they were "subject matter experts" and that their help was needed to determine the tasks performed on their job. Following the introduction, panel participants were asked to describe their major job functions; nine functions were identified. These functions, such as 1) interacting with the customers, 2) maintaining records and logs, and 3) researching the data bases, were recorded and posted on a wall where they could be seen by everyone. Panel participants were then asked to describe the tasks they performed within each of these functions. The researcher transformed the descriptions

into tasks statements. These statements were also recorded and posted. Panel participants were allowed to edit the task statements when needed in order to more accurately describe their job. Task statements collected from earlier panels were shared with later participants. Thus, later panels were an abbreviated version of earlier panels. At the end of each panel, participants were thanked for their time, effort, and patience.

At each site, observations of job incumbent were also made. In other words, the researchers sat with several different job incumbents during the course of the job analysis in order to observe the job.

4) Consolidate the collected task statements. The researchers reviewed and edited all of the task statements that were collected. The task statements for all four jobs were combined and then were iteratively resorted into the major job functions (also know as: task clusters). This sort yielded twelve task clusters; two of the original clusters were each split into two clusters and a miscellaneous cluster was added.

The two original clusters that the researchers split were: 1) Interaction with the Customer and 2) Testing. The task statements included in the first cluster, Interaction with the Customer, were split into the following two clusters: 1) Interaction with the Customer--Obtaining information and 2) Interaction with the Customer--Providing information. More of the task statements included in the "Obtaining information" cluster were generated by the

REPs and CLERKS while more of the task statements included in the "Providing information" cluster were generated by the ATECHS and BTECHS. The researchers split the one cluster, Interaction with the Customer, into two in order to reflect this pattern.

The other cluster that was split, Testing, became two clusters: 1) Preliminary trouble verification and 2) Testing. This split was done in order to conform to contracted job responsibilities. By contract, all testing was the responsibility of the ATECHS and BTECHS. Nevertheless, CLERKS in some locations would informally perform simple routine trouble tests. The more informally performed simple routine trouble tests became the first cluster--Preliminary trouble verification. The other tasks remained in the Testing cluster.

5) Ask SMEs to review and edit the task statements. All of the task statements and the twelve task clusters were reviewed and edited by members of the Company Liaison Team. In two separate panels, selected supervisors of these jobs were also asked to review the task statements and clusters.

6) Prepare the final task inventory. 210 task statements survived the iterative process to be included in a comprehensive task inventory. These statements describe what incumbents say they do while on the job. The task statements were written according to the following rules (Goldstein, 1987):

i. The statement should be terse and the present tense should be used. Long involved sentences that could confuse the survey respondents should be avoided. Words that do not give necessary information should be avoided.

ii. The statement should begin with a functional verb that identifies the primary job operation. The verb should specifically describe the work to be accomplished.

iii. The statement should describe what the work is, how the worker does it, to whom/what it is done, and why the worker does it. The following task statement (written for a secretarial job) illustrates their ideal form:

What?	To whom/what?
<u>Sorts</u>	<u>correspondence, forms, and reports</u>
Why?	How?
<u>in order to facilitate filing them</u>	<u>alphabetically.</u>

iv. The statement should be stated completely. However, it should not be stated in such detail that it becomes a time and motion study.

The task clusters, their summary descriptions, and sample task statements are listed in Table 1. Although there is only one set of 12 task clusters, the clusters "fit" each job differently. For example, REPs report that they perform a different set of tasks within a task cluster (e.g., Interaction with the Customer--Providing information) than do ATECHs. REPs also do not perform any tasks for the last two clusters, Preliminary trouble verification and Testing. However, one objective of the job analysis was

**Table 1: Task clusters, task cluster summaries, and example task statements. (Only those task clusters involved in this dissertation are presented. Information about the remaining six task clusters has been withheld to protect the anonymity of the participating organization.)**

**I. Interaction with the customer: Obtaining information.**  
Gather, process, and interpret relevant information obtained from the customer.

1. Ask the customer for relevant information in order to complete the trouble report.
2. Follow-up the trouble report with the customer to determine if his/her service is satisfactory.
3. Call the customer to verify whether the problem has been resolved.

**II. Interaction with the customer: Providing information.**  
Inform and educate the customer about his/her service, potential and actual problems associated with the service, and the process of service problem resolution. Also, provide other information about the customer-[Company] relationship.

1. Call the customer to keep him/her informed about progress in resolving the problem.
2. Provide the customer with information so that he/she can follow-up the call at a later time in order to obtain status information.
3. Interpret the problems described by the customer in order to explain why the trouble occurred.

**IX. Analysis of the trouble report.** Interpret the information contained in the trouble report and other supporting documents, integrate all of these pieces of information to analyze the trouble (e.g., its service priority, the source of the trouble, whether or not a revate is necessary), and determine to which office [examples included] the trouble should be referred for resolution.

1. Examine the trouble ticket to determine if all the necessary information for the trouble analysis is reported.
2. Check the history file to determine whether a problem is chronic.
3. Use the data bases to determine the services that the customer obtained.

Table 1 (con't)

X. Preliminary trouble verification. Conduct preliminary test calls on the customer's line to verify the trouble.

1. [Conduct a preliminary test] to determine whether the customer is having difficulty with his/her service.

2. Isolate the trouble [details omitted] to verify whether the service is working properly.

XI. Testing. Conduct advanced tests on [the equipment] in order to identify and isolate the source of the trouble.

1. Test the [equipment] in order to isolate the trouble.

2. Visit the customer's premise to work with [others] to resolve chronic troubles.

to identify points of job overlap so task statements for all jobs were included in one survey and one set of clusters was used to describe the jobs.

In the survey, job incumbents were asked to provide two ratings for each task statement included in the inventory. Since all job incumbents--regardless of job type--received the same survey, the first rating asked them to:

1) indicate whether or not each task was considered to be a part of the job.

If they indicated that the task was a part of the job, they continued with the second rating:

2) rate each task in terms of its relative frequency with respect to the other tasks listed in the inventory.

The rating scales are presented in Table 2. The first rating--whether or not the job incumbent performed the job--served as the foundation for creating the mean frequency score for each task cluster. Briefly, only tasks considered to be part of the job were included in the computation of the mean frequency score. This score is described in more detail later.

#### Development of the Work Facilitation Diagnostic (WFD).

In order to develop the measure of the setting, the steps to develop the WFD in the parent research program were followed (see Moeller et al., 1986). Twenty group interviews, composed of 3, 4, or 5 job incumbents and a researcher, were conducted at 8 company locations. Nine of the group interviews included only ATECHs, 3 included only



**Table 2: Guides for rating the task statements.**

**TELL US IF THE TASKS LISTED ARE**

- 0 - definitely not a part  
of the job
- 1 - definitely a part of  
the job

**TELL US HOW FREQUENTLY YOU DO  
THE TASKS LISTED RELATIVE TO  
OTHER TASKS**

- 1 - infrequent tasks
- 2 - less frequent than most tasks
- 3 - moderately frequent
- 4 - more frequent than most tasks
- 5 - most frequent tasks

BTECHs, 4 included only CLERKs, and 3 group interviews included only REPs. The group interviews were long and took about 2 hours to complete.

Each group interview began with a brief introduction to the project; job incumbents were informed about the purposes of the project and they were told that they were "subject matter experts." In all but the first five group interviews (these were all ATECH group interviews), lists of task statements were distributed to, and discussed by, the job incumbents. They were told 1) not to be concerned if there were tasks listed that they didn't perform but to 2) add any missing tasks that they did perform. With each progressive interview, fewer and fewer task statements were added to the list. The rest of the discussion during the interview revolved around the following theme: Incumbents were asked to describe what helps them be effective on the job and, also, what keeps them from being as effective as they knew they could be. The researchers took copious notes during the group interviews.

Following the group interviews, the researchers generated numerous descriptions of work facilitators and work inhibitors. They then evaluated, edited, and sorted these descriptions into the Katz and Kahn (1978) subsystem framework. The sort was done by an iterative process. In other words, disputed descriptions were evaluated, edited, and resorted until a final solution was reached. The descriptions of facilitators and inhibitors were also reviewed by

SMEs. Members of the Liaison Team and the two supervisory groups reviewed the facilitators and inhibitors while also reviewing the task statements.

After this process, 148 descriptions of facilitators or inhibitors to work effectiveness were included in the survey that also contained the task inventory. The subsystems, their summary descriptions, and examples of facilitators and inhibitors are listed in Table 3. Job incumbents were asked to indicate how frequently, using a six-point scale, these facilitators and inhibitors occurred in their workplace. The six-point rating scale was as follows:

- NA - does not apply
- 1 - very infrequently
- 2 - infrequently
- 3 - sometimes
- 4 - frequently
- 5 - very frequently

(In this case, too, combining the descriptions of work facilitation across all jobs required a "not applicable" response be included in the response format.)

Criterion data. Two indices of unit effectiveness were obtained from management. The primary index of unit effectiveness was customer satisfaction data. Management routinely has telephone interviews conducted with customers in order to assess their satisfaction with the service they received. These data are tabulated monthly for each Company location. Management provided a summary statistic (i.e., percentage of "positive" responses given by the surveyed customers) for the following two customer

Table 3: Subsystems, their summary descriptions, and examples of facilitators and inhibitors of work performance.

I. Supportive subsystem concerns the availability of information from various sources: written documents, such as the customer trouble report, and also people, such as the supervisor, coworkers, and other staff.

1. The information recorded in the trouble report misrepresents the customer's problem (reverse scored).

2. Coworkers in our group help each other resolve difficult customer troubles (e.g., provide contact numbers of helpful people).

3. Our supervisor makes an effort to find answers to our questions.

II. Adaptive subsystem deals with events and changes that happen in the organization's environment.

1. Our supervisor prepares and distributes briefs that inform us of changes in our job (e.g., change in procedures, change in codes).

2. We meet with the corresponding people in the [outside] agency (e.g., technicians, supervisors) to discuss mutual job-related concerns (e.g., coordinate activities, update on new equipment).

3. People in the [outside agency] keep us informed when they make circuitry changes.

III. Production subsystem concerns the nature of the work that gets done in the workplace. It deals with issues such as the characteristics of the work and the time allocated to do it.

1. We keep the customer trouble log complete and up-to-date.

2. Incoming tickets that are similar to previous tickets are distributed to the same technician or clerk.

3. Overtime is required to meet the demands of our job.

Table 3 con't.

IV. Equipment maintenance subsystem involves issues related to the physical plant and the equipment Incumbents use on the job.

1. Office furniture is comfortable.
2. Printers are available for printing hard copies of trouble tickets.
3. The available testing equipment is old and archaic (reverse scored).

V. Personnel maintenance subsystem concerns the human resource practices of the organization.

1. Newcomers "piggy-back" with more experienced clerks or technicians until they become familiar with the job.
2. Unqualified people are being hired to perform the job (reverse scored).
3. Our supervisor meets with us individually to discuss performance problems.

VI. Managerial subsystem deals with issues such as coordinating work schedules, setting performance goals, and delegating responsibilities.

1. Posted work assignments change with short notice (reverse scored).
2. Our supervisor lets us use our own methods for doing the job.
3. Our supervisor calls group meetings to discuss performance goals.

**satisfaction items:**

1) Overall satisfaction with the way the repair was handled, and

2) Satisfaction with the way the customer's call to the Repair Service Center was handled.

Division One provided ten month's worth of data (January through October) for the ATECH job. Division Two provided eight month's worth of the data (March through October) for both the BTECH and CLERK jobs. Customer satisfaction data were not available for the REP job.

Another index of unit effectiveness was supervisory ratings of his/her unit. As part of the larger research project, supervisors were asked to evaluate their work unit's performance using the following statement:

We are effective in satisfying the needs of our customers.

Supervisors were asked to indicate (using a 5-point scale, 1 being very true and 5 being very false) whether or not they believed this statement was true for their work unit.

In addition, supervisors were asked to rate the statement in two ways. First, they were asked to indicate what they believed to be true about their effectiveness in meeting the needs of their customers. Second, they were asked to speculate and indicate what they thought upper management believed to be true about their effectiveness in meeting their customers' needs.

### Analysis of the data.

One challenging aspect of working with unit level data is coping with the loss of statistical power when individuals' data are aggregated to represent unit level information. For example, for the ATECH job, "N" shrinks from 125 (individual surveys) to 33 (aggregated individuals' survey data reflecting work unit information). Before describing the analyses that will be used to test the hypotheses, construction of the task cluster scores, the subsystem scores, the customer satisfaction (or supervisory rating) scores, and the procedures that will be used to assess some psychometric characteristics (e.g., means, standard deviations, coefficients alpha, and within group inter-rater reliability) of the various scores are described.

Construction of the task cluster scores. Only 5 of the 11 a priori task clusters were included in this study. These five are the clusters needed to operationalize the two task structure facets--customer contact tasks and repair tasks. These clusters are: 1) Interaction with the Customer: Obtaining information (19 task statements), 2) Interaction with the Customer: Providing information (29 task statements), 3) Analysis of the trouble report (23 task statements), 4) Preliminary trouble verification (7 task statements), and 5) Testing (7 task statements). The task statements from the first two task clusters make up the customer contact tasks (or CONTACT). The task statements from the last three task clusters make up the repair

tasks (or REPAIR).

For each job, tasks that at least one job incumbent (regardless of work unit membership) indicated was a part of the job were identified. These task statements became the set of "baseline" tasks for the creation of the task cluster scores. For example, if at least one of the 125 ATECHs indicated that a task was a part of the job, then the task statement was included in the construction of the appropriate task cluster score for the ATECH job. In effect, the set of baseline tasks serves as the "common denominator" so that meaningful comparisons could be made across all like-titled jobs within and among their respective organizational work units.

Mean CONTACT and REPAIR cluster frequency scores were constructed separately for each organizational work unit using the task statements identified for the job as described above. If a job incumbent indicated that one of the baseline tasks was not a part of the job, then a zero rating (the task was infrequently performed on the job) was assumed and included in the creation of the CONTACT or REPAIR mean frequency score. (In this dissertation, job incumbents did not provide task frequency ratings for tasks that they did not consider to be a part of their job. These blanks were converted into zeros for purposes of this research.) Within each organizational work unit, then, aggregate CONTACT and REPAIR mean frequency scores were calculated using the baseline task statement mean



frequency scores. (In other words, task cluster mean frequency scores were created by a two-step aggregation process. Data were aggregated across organizational unit members (i.e., job incumbents) and again across appropriate task cluster statements.)

Means and standard deviations for the two task facets, CONTACT and REPAIR, are presented for each of the four jobs. Internal consistency reliability estimates for the a priori task clusters are also presented. Finally, the James et al. (1984) procedure for estimating within-group interrater reliability was used to assess agreement among the organizational work unit members. James et al. recommend that ratings from at least six raters should be collected in order to accurately assess within-group interrater reliability. This analysis was conducted only on those organizational units in which at least six job incumbents provided CONTACT and REPAIR task statement data.

Construction of the subsystem scores. Six a priori subsystem mean frequency scores were created from the 148 descriptions of work facilitation and work inhibition that were included in the survey. The subsystems and the number of descriptions in each were:

- 1) Personnel Maintenance, 22 descriptions,
- 2) Equipment Maintenance, 15 descriptions,
- 3) Production, 23 descriptions,
- 4) Adaptive, 24 descriptions,
- 5) Managerial, 20 descriptions, and
- 6) Supportive, 43 descriptions.

The descriptions of work inhibition were reverse scored for facilitation scale construction. Zero (0) scale values (meaning, "not applicable") were recoded to blank (and, unlike the construction of the task cluster scores, blanks remained blank). For each job, incumbents' responses were also aggregated twice--once across organizational work unit members' responses and again across appropriate subsystem descriptions of work facilitation or work inhibition.

Means and standard deviations for the six work facilitation subsystem scores were presented for each of the four jobs. In addition, internal consistency reliability estimates for each job were also presented. Finally, the James et al. (1986) procedure for estimating within-group interrater reliability was used to assess agreement among the organizational unit members. As with the task statement data, this analysis was conducted only on those organizational units in which at least six job incumbents provided work facilitation data.

#### Construction of the customer satisfaction scores.

Management provided ten or eight consecutive months of customer satisfaction data for three jobs--ATECH, BTECH and CLERK. These data were unavailable for the REP job. When received from management, these data already described how satisfied customers, as a whole, were with the service they received from an organizational unit. For one organizational work unit, for example, management had

2372 customers surveyed during the eight-month period (approximately 300 customer each month) but only a summary statistics (i.e., percent satisfied) was provided for each month.

After calculating the stability of these data across the consecutive months, they were aggregated to yield one index of customer satisfaction. (Month-to-month stability was high.)

Means and standard deviations for the six work facilitation subsystem scores were presented for each of the four jobs. In addition, internal consistency reliability estimates for each job were also presented. Finally, the James et al. (1986) procedure for estimating within-group interrater reliability was used to assess agreement among the organizational unit members. As with the task statement data, this analysis was conducted only on those organizational units in which at least six job incumbents provided work facilitation data.

Hypothesis testing. To test the hypotheses presented in this dissertation, the data were combined into two different, but not mutually exclusive, data sets. The first set included all of the available data from each job type. The second set was a subsample of the first. It included all the work groups from the two Division One jobs (ATECH and REP) and some of the work groups from the two Division Two jobs (BTECH and CLERK).

The second data set removed some data that were potentially confounded. Many of the Division Two work

groups combined both types of jobs. These incumbents not only shared the same facilities, they also shared the same supervisor and the same customer satisfaction data. To safe-guard against the difficulty that supervisors might have had in evaluating BTECHs and CLERKS independently, and to eliminate the need to disaggregate the common customer satisfaction data to both BTECH and CLERK work groups, only the "isolated" Division Two jobs were retained in this data set.

Division Two jobs were considered to be isolated if only BTECHs or if only CLERKS worked at a given location. In five locations, then, only BTECHS or only CLERKS were assigned to work there. These five isolated Division Two work groups were added to the work groups from the Division One jobs to form the second data set.

To test the hypotheses with these two data sets, the predictor data from the four jobs (i.e., the two task scores and the six work facilitation subsystem scores) were first standardized within each job type, and then combined. Consequently, in these analyses the means for all the predictor variables were zero (or near zero) and the standard deviations were one (or near one). Since the criterion data across all the jobs had a common metric, these data were not standardized.

Most of the hypotheses were tested by calculating the Pearson Product-Moment Correlation statistic:

- 1) Hypothesis One was tested by correlating the fre-

quency of customer contact tasks (CONTACT) with:

- a) the customers' report of how satisfied they were with the service they received (CUSSAT) and
- b) the supervisor's report of how well the work group met the needs of their customers (SUPRATE).

2) Hypothesis Two was tested by correlating the frequency of repair tasks (REPAIR) with both indices of customer satisfaction (CUSSAT and SUPRATE).

3) Hypothesis Five was tested by correlating the six work facilitation subsystem scales (PERSONNL, ADAPT, MGRL, EQUIP, PROD, SUPPORT) with the two customer satisfaction indices (CUSSAT and SUPRATE).

4) Hypothesis Six was tested by correlating PERSONNL with both CONTACT and REPAIR.

Hypothesis Three was tested by regressing the blocked set of the two task facets (CONTACT and REPAIR) with each index of customer satisfaction (CUSSAT and SUPRATE) described above. Two separate equations were calculated for each data set, once using SUPRATE as the dependent variable and once using CUSSAT as the dependent variable.

Hypothesis Four was tested in the following manner (Arnold, 1982). First, the data were split into two groups. One group represented the organizational work groups that reported spending more time doing REPAIR tasks. The other group represented the organizational work groups that reported spending less time doing REPAIR tasks. Since the data were standardized, a simple mean split (MEAN = 0) was done. Then, within each parcelled

data set, CONTACT was correlated with both indices of customer satisfaction.

The proposed total model of the relationships among the task structure of a job, the characteristics of the setting in which the job is embedded, and work unit effectiveness (i.e., customer satisfaction) was tested through a series of partial correlations. The partial correlations between personnel work facilitation and the two indices of customer satisfaction were calculated, controlling for the influence of: 1) the frequency of customer contact tasks and, in a separate analysis, 2) the frequency of repair tasks. If the correlations between PERSONNL and SUPRATE (or CUSSAT) is reduced towards zero when controlling for the task structure of a job, then the proposed model--that the characteristics of the setting works through the task structure of a job--is supported.

## RESULTS

The results of the analyses are presented in two sections. In the first section, intercorrelations for the full standardized data set--combining information across all four jobs--are presented. There were 61 work groups that provided information about the job and the setting. However, when the work group data were matched with the customer satisfaction data obtained from the supervisors, only 39 work groups had both predictor and criterion data. Alternatively, when the work group data were paired with the customer satisfaction data collected from the customers, only 31 work groups had both types of data. (In all, data from 272 job incumbents and 34 supervisors--some supervisors provided data for both BTECH and CLERK work units--were included in the analyses involving the full standardized data set.)

In the second section, intercorrelations for the potentially less confounded data set are presented. This data set combined the work groups from the Division One jobs and some of the work groups from the Division Two jobs. The resulting sample sizes for this set were  $N = 31$  when the predictor data were paired with the supervisory ratings and  $N = 19$  when the predictor data were paired with the customer satisfaction data.

For both data sets, a different but overlapping set of task statements was used when creating the two task scale means (CONTACT and REPAIR) for each of the four

jobs. In order to combine these data across job type, then, the data were first transformed into Z-scores within job type. All the means for the variables as transformed were zero (or near 0) and the standard deviations were one (or near 1). Appendix C, however, contains the descriptive statistics (scale means, standard deviations, inter-correlations, and indices of reliability) for each job before the transformation procedure was done.

#### The full standardized data set

Table 4 presents the intercorrelations for the two task scales (CONTACT and REPAIR), the personnel work facilitation subsystem scale (PERSONNL), and the two indices of customer satisfaction (SUPRATE and CUSSAT). Table 4 shows the following:

- 1) the correlation between the two task scales ( $r = .61, p < .001$ ) indicates that job incumbents who report doing more customer contact tasks also report doing more repair tasks.
- 2) the correlation between the two indices of customer satisfaction ( $r = -.33, ns, N = 18$ ) indicates that there is no relationship between them.
- 3) the correlations between the two task scales and the two indices of customer satisfaction do not lend much support for the first two hypotheses. Hypothesis One highlighted the time job incumbents spend doing customer contact tasks. Hypothesis Two focused on the time job incumbents spend doing repair tasks. Both hypotheses



Table 4: Intercorrelations among the task scales, the personnel work facilitation subsystem scale, and the two indices of customer satisfaction for the full standardized data set.

	1	2	3	4
1) CONTACT	--			
2) REPAIR	.61*	--		
3) PERSONNL	.18	.18	--	
4) SUPRATE	.15	.25*	.04	--
5) CUSSAT	-.30	-.18	.18	-.33

N = 61 for variables 1-3

N = 39 for variable 4

N = 31 for variable 5

N = 18 between variables 4 and 5

\*  $p < .05$

were similar in that they predicted a positive relationship between doing these tasks and customer satisfaction. Contrary to the first hypothesis, time spent doing customer contact tasks is unrelated to either customer satisfaction reports or supervisory ratings of customer satisfaction. Time spent doing repair tasks, on the other hand, has mixed relationships with the two customer satisfaction indices. Repair task frequency is unrelated to customer satisfaction reports but is positively related to supervisory ratings of the work unit's effectiveness in meeting the needs of the customers ( $r = .25$ ,  $p < .05$ ). This finding suggests that when supervisors see their subordinates spending a lot of time doing repair tasks, they (the supervisors) think that their customers will be satisfied; and

4) the correlations between the task scales and the personnel work facilitation subsystem scale show no relationship between them. Hypothesis Six suggested that when management's personnel policies, etc., facilitate the delivery of service, then the jobs will be structured to provide the service (i.e., job incumbents will be spending more time doing customer contact tasks and repair tasks). However, Hypothesis Six is not supported by the data.

Table 5 presents the results of the test of Hypothesis Three. Hypothesis Three, which examines the relationship between both task scales--combined--and customer satisfaction, was not supported by the data.

TABLE 5: Multiple regression using the two task scales as the predictor variables (entered as a blocked set) and, in separate equations, the two indices of customer satisfaction for the full standardized data set.

CONTACT and REPAIR entered into the equation as a blocked  
<sup>a</sup>  
 set

<u>CRITERION</u>	<u>R</u>	<sup>2</sup> <u>R</u>	<u>F</u>	<u>n</u>
SUPRATE	.25	.06	1.22	39
CUSSAT	.18	.03	.44	30

<sup>a</sup>  
 Neither F ratio is significant at  $p < .05$

Table 6 shows the results of the test of Hypothesis Four. This hypothesis explored whether or not the performance of repair tasks moderates the relationship between the performance of customer contact tasks and customer satisfaction. The data were split at the mean (0) of the REPAIR variable. Means, standard deviations, and intercorrelations for the remaining task scale (CONTACT) and the two indices of customer satisfaction (SUPRATE and CUSSAT) are presented in the table for each half of the data set. Contrary to Hypothesis Four, none of the correlations is significantly different from zero.

Table 7 presents the intercorrelations among the six work facilitation subsystem scales and the two indices of customer satisfaction. Hypothesis Five, suggesting that the personnel work facilitation subsystem would be the leading subsystem, is not supported by the data. Neither SUPRATE nor CUSSAT are significantly related to PERSONNL. In fact, of the twelve correlations between these two sets of data, only one reaches the level of conventional statistical significance ( $r = .28$ , PROD and SUPRATE).

The test of the proposed total model of the variables was not performed since the results of the previous analyses did not support the hypotheses.

The second, less confounded, data set.

Table 8 presents the intercorrelations for the two task scales (CONTACT and REPAIR), the personnel work facilitation subsystem scale (PERSONNL), and the two indices

Table 6: Means, standard deviations, and intercorrelations of the mean-split subsamples for the full standardized data set.

REPAIR greater than zero (0).

	MEAN	S.D.	1	2
1. CONTACT	0.58	.81	--	
2. SUPRATE	0.16	.86	.15	--
3. CUSSAT	0.86	.04	-.20	-.43

N = 18 for variable 2

N = 15 for variable 3

N = 9 between variables 2 and 3

REPAIR less than zero (0).

	MEAN	S.D.	1	2
1. CONTACT	-0.49	.83	--	
2. SUPRATE	-0.14	1.04	.05	--
3. CUSSAT	0.87	.04	.38	.05

N = 21 for variable 2

N = 16 for variable 3

N = 9 between variables 2 and 3

**TABLE 7: Intercorrelations among the six work facilitation subsystem scales and the two indices of customer satisfaction for the full standardized data set.**

	1	2	3	4	5	6	7
1. SUPPORT	--						
2. ADAPT	.49*	--					
3. PROD	.39*	.47*	--				
4. EQMNT	.32*	.39*	.47*	--			
5. MGRL	.66*	.53*	.30*	.46*	--		
6. PERSONNL	.65*	.61*	.35*	.35*	.69*	--	
7. SUPRATE	-.02	.19	.28*	.18	.04	.04	--
8. CUSSAT	-.04	.06	.06	.28	.18	.17	-.21

N = 61 for variables 1 - 6

N = 39 for variable 7

N = 31 for variable 8

N = 18 between variables 7 and 8

\*  $p < .05$

of customer satisfaction (SUPRATE and CUSSAT) for the work groups from the Division One jobs and a few of the isolated work groups from the Division Two jobs. Table 8 shows the following:

1) the correlation between the two task scales ( $r = .58$ ,  $p < .001$ ) indicates that job incumbents who report doing more customer contact tasks also report doing more repair tasks.

2) the performance of customer contact tasks was positively related to customer satisfaction reports ( $r = .42$ ,  $p < .05$ ) but unrelated to supervisory ratings.

3) the performance of repair tasks was positively related to supervisory ratings ( $r = .34$ ,  $p < .05$ ) but unrelated to customer satisfaction reports.

4) the two indices of customer satisfaction were still unrelated to each other ( $r = -.41$ , ns).

This data set showed partial support for several hypotheses of this dissertation. As was predicted in Hypothesis One, the more time job incumbents spent in contact with the customer (e.g., calling customers to let them know about the progress achieved in resolving their trouble), the more satisfied customers were with the service they received. There was no relationship between the performance of customer contact tasks and supervisory ratings of customer satisfaction. Supervisors, then, did not make the connection between customer contact task performance and customer satisfaction.

Table 8: Intercorrelations among the two task scales, the personnel work facilitation subsystem scales, and the two indices of customer satisfaction for the two Division One jobs and the isolated Division Two jobs (standardized data set).

	1	2	3	4
1. CONTACT	--			
2. REPAIR	.58*	--		
3. PERSONNL	.38*	.30*	--	
4. SUPRATE	.15	.34*	.09	--
5. CUSSAT	.42*	.04	.15	-.41

N = 47 for variables 1 - 3

N = 31 for variable 4

N = 19 for variable 5

N = 10 between variables 4 and 5

\*  $p < .05$



Hypothesis Two (that the more time job incumbents spent doing repair tasks, the more satisfied customers would be) was not truly supported by these data. In other words, there was no relationship between REPAIR and customers' reports of their satisfaction. There was a relationship between REPAIR and supervisory ratings, however. It seems that supervisors and the researcher developed similar hypotheses. They seem to believe, like Hypothesis Two states, that customers will be more satisfied if job incumbents spend their time doing repair tasks.

With respect to Hypothesis Six, Table 8 also reveals the following:

5) The personnel work facilitation subsystem scale was positively, and significantly, related to both task scales ( $r = .38$ , with CONTACT, and  $r = .30$ , with REPAIR,  $p < .05$  in both cases).

Contrary to the first data set presented, this subset of the data shows support for Hypothesis Six. When management's personnel policies and practices support and reward the service aspects of these jobs, then job incumbents spend more time doing the parts of their jobs (doing customer contact tasks and repair tasks) that are related to customer satisfaction.

Table 9 presents the results of the test of Hypothesis Three. This hypothesis, which suggested that the combined performance of customer contact tasks and repair tasks would be related to the highest levels of customer

Table 9: Multiple regression using the two task scales as the predictor variables (entered as a blocked set) and, in separate equations, the two indices of customer satisfaction for the two Division One jobs (ATECH and REP) and the five isolated Division Two jobs (CLERK and BTECH).

CONTACT and REPAIR entered into the equation as a blocked set<sup>a</sup>

<u>CRITERION</u>	<u>R</u>	<u>R<sup>2</sup></u>	<u>F</u>	<u>n</u>
SUPRATE	.27	.07	1.13	31
CUSSAT	.28	.08	.66	19

<sup>a</sup> Neither F ratio is significant at  $p < .05$

satisfaction, was not supported by this data set either. Neither the full standardized data set nor this subsample support Hypothesis Three.

Table 10 shows the results of the test of Hypothesis Four. The results do not support the notion that the performance of repair tasks moderates the relationship between the performance of customer contact tasks and customer satisfaction.

Table 11 presents the intercorrelations among the six work facilitation subsystem scales and the two indices of customer satisfaction. Hypothesis Five, suggesting that the personnel work facilitation subsystem would be the leading subsystem, is not supported by the data. As with the full standardized data set, neither SUPRATE nor CUSSAT are significantly related to PERSONNL. In fact, of the twelve correlations between these two sets of data, only one reaches the conventional level of statistical significance ( $r = .33$ , PROD and SUPRATE).

The test of the proposed total model of the variables is presented in Table 12. The partial correlations between the two indices of customer satisfaction (SUPRATE and CUS-SAT) and PERSONNL (when controlling for CONTACT and REPAIR) are not different from the zero-order correlations of these variables. There is no evidence to support the relationships hypothesized in the model.

Table 10: Means, standard deviations, and intercorrelations of the mean-split subsamples for the two Division One jobs and the isolated Division Two jobs (standardized data set).

REPAIR greater than zero (0).

	MEAN	S.D.	1	2
1. CONTACT	0.58	0.84	--	
2. SUPRATE	0.24	0.92	.20	--
3. CUSSAT	0.14	0.86	-.32	-.88*

N = 15 for variable 2

N = 8 for variable 3

N = 6 between variables 2 and 3

REPAIR less than zero (0).

	MEAN	S.D.	1	2
1. CONTACT	-0.44	0.86	--	
2. SUPRATE	-0.10	1.18	.05	
3. CUSSAT	-0.02	1.14	.45	.18

N = 16 for the variable 2

N = 11 for variable 3

N = 4 between variables 2 and 3

\*  $p < .05$

**Table 11: Intercorrelations among the six work facilitation subsystem scales and the two indices of customer satisfaction for the two Division One jobs and the isolated Division Two jobs (standardized data set).**

	1	2	3	4	5	6	7
1. SUPPORT	--						
2. ADAPT	.52*	--					
3. PRODUCT	.39*	.39*	--				
4. EQMNT	.29*	.36*	.46*	--			
5. MANAGRL	.65*	.64*	.44*	.48*	--		
6. PERSONNL	.60*	.72*	.46*	.35*	.63*	--	
7. SUPRATE	.00	.26	.33*	.22	.05	.09	--
8. CUSSAT	-.08	-.15	.02	.16	.16	.15	-.20

N = 49 for variables 1 - 6

N = 31 for variable 7

N = 19 for variable 8

N = 10 between variables 7 and 8

\*  $p < .05$

Table 12: Partial correlations between the personnel work facilitation scale and the two indices of customer satisfaction for the second, less confounded, data set.

Controlling for CONTACT...

	PERSONNL
SUPRATE	.03
CUSSAT	.21

Controlling for REPAIR...

	PERSONNL
SUPRATE	-.02
CUSSAT	.22

Zero order correlations...

	PERSONNL
SUPRATE	.06
CUSSAT	.21

## DISCUSSION

The purpose of this dissertation was to explore the relationships among three sets of variables: the task structure of a job, the characteristics of the setting in which the job is embedded, and work unit effectiveness. The study was conducted in a service organization and several hypotheses were tested.

Earlier research has shown a relationship between two of these variables. Schoorman and Schneider (1987), for example, found that a work unit climate (or the characteristics of the setting) that facilitates the delivery of service was positively related to customer satisfaction (or work unit effectiveness). This dissertation attempted to explain why characteristics of the setting would be related to customer satisfaction. It was proposed that customers would be more satisfied if incumbents did their job in certain ways (for example, if they spend more time doing customer contact tasks). It was further proposed that incumbents would spend more time doing customer contact tasks if the setting facilitated task performance. In other words, incumbents would perform those tasks that were expected, rewarded, and supported more often than unrewarded tasks. Job structure, then, was hypothesized as a mediating variable of the work unit setting - work unit effectiveness relationship.

### Recapitulation.

The hypotheses. First, it was proposed that the

tasks people spend time doing affect work unit effectiveness. That is, the specific tasks that are performed by job incumbents influence customers' perceptions of how well they have been served. Two facets of a multi-faceted customer service job were suggested to be of particular importance; service production tasks (i.e., repair tasks) and service delivery tasks (i.e., customer contact tasks). Typically, the literature regards these two facets as one; service production and service delivery are considered to be simultaneous activities. This dissertation attempted to tease apart these two facets and, further, to examine their individual effect on customers' satisfaction with the service they received.

It was hypothesized that if these tasks, customer contact and repair tasks, are done, then (from at least the standpoint of the customer) the work unit will be judged to be effective. The focus of this idea was on the time spent doing these tasks, and not the quality of task performance. Some job incumbents, on average, probably do the job better than others, and some groups of incumbents, on average, probably do the job better than other groups. This qualitative difference is also likely related to customer satisfaction. The focus of this dissertation, however, is the structure of the job--independent of individual job performance quality. Individual job performance quality was assumed to be relatively equal across work groups.



Hypothesis One highlighted customer contact tasks and reads: If job incumbents spend their time doing customer contact tasks, then customers will be satisfied with the service they receive. Hypothesis Two highlighted repair tasks and reads: If job incumbents spend their time doing repair tasks, then customers will be satisfied with the service they receive.

The third hypothesis examined the combined effect of these two facets on unit effectiveness. Hypothesis Three suggested that customers will be most satisfied with the service they receive if job incumbents spend time doing both customer contact tasks and repair tasks.

It was further suggested that these two facets of service could be teased apart. Neubauer (1986) and others (e.g., Berry, 1985; Gronroos, 1982) suggested that service delivery makes the difference in the service industry; that service delivery gives companies a "competitive edge." However, in this dissertation, a competing hypothesis (Hypothesis Four) was also suggested; namely, that service production (doing the repair tasks) would take precedence over service delivery (doing customer contact tasks). In other words, a courteous repair person may not yield customer satisfaction if the repair itself is not being accomplished.

In this dissertation, it was also proposed that the characteristics of the setting influence the way the job gets done. Management's policies, practices, and procedures are expressions of what management expects job incum-

bents to do, what management rewards job incumbents for doing, and the ways management supports job incumbents while they do their job. In this study, the kinds of settings that local management developed to get people to do the job were examined. It was assumed that there is a link between the kind of service employees provide customers and the policies, practices, and procedures by which management functions. Shostack (1977, p. 73) described this link between management's policies, practices, and procedures and customer satisfaction:

When superior service firms are examined, a consistent pattern to the managerial process is evidenced. One sees a pronounced emphasis on controllable details, continuous investments in training, a concern with the customer's view, and reward systems that place value on service quality. In poor service firms, however, one sees an internal rather than external orientation, a production or throughput emphasis, a view of the customer as a transaction generator, a lack of attention to details affecting the customer, and a low priority placed on "soft" service quality values.

As a consequence of these different orientations, jobs will be structured differently. The "value" placed on serving the customer, for example, will be reflected in the type and time spent doing customer contact tasks. In a multi-faceted customer service job, whether or not job

incumbents "find" or "make" time to do these tasks depends upon the characteristics of the setting in which they work, i.e., the extent to which actually doing the tasks is facilitated.

It was proposed that management's policies, practices, and procedures could be conceptualized using Katz and Kahn's (1978) subsystem model. These researchers described five functional areas that management must attend to in order to achieve long-term organizational survival (or rather, organizational effectiveness). These subsystems need not be equally important for all organizations, however. In keeping with the services marketing literature, it was hypothesized that in service organizations the personnel work facilitation subsystem (which operates to ensure that the people of the organization are capable of getting the work done) would emerge and be most influential in attaining customers' satisfaction with service.

Hypothesis Five suggested that the personnel work facilitation subsystem would emerge as the leading subsystem (and thus be more strongly related to customer satisfaction than any of the remaining subsystems). Hypothesis Six suggested that the personnel work facilitation subsystem would be related to the way the job gets done.

The model. The theoretical foundation of this dissertation was Lewin's (1951) field theory. Roberts et al. (1978) provided an adaptation of Lewin's model, that  $E = f(P, E)$ , so that it could be used to describe greater-than-individual level events. Their equation, that  $R = f(U, E)$ ,

leaves the relationship between U (the responding unit) and E (the environment) unspecified. This dissertation proposed that the way the job gets done (U) mediates the relationship between the work setting (E) and customer satisfaction (R). These variables form the key relationships of this dissertation: that management gives shape to the task structure of a job through their choice of the policies, practices, and procedures that support and reward task performance. The task structure of the job--what job incumbents spend their time doing--in turn, influences customer satisfaction.

Summary of the hypothesis testing. In this dissertation, there were two indices of organizational effectiveness: supervisory ratings of their work unit's effectiveness in satisfying customers' needs (SUPRATE) and customer satisfaction reports (CUSSAT). Contrary to expectations, these two indices were unrelated. Supervisory ratings were not good substitutes for actual customer satisfaction reports so both dependent variables were examined.

This finding could be explained by the nature of the customer satisfaction data supervisors receive. While upper management collected customer satisfaction data, and provided these data to supervisors, the data were not aggregated to the work group level. Instead of getting customer satisfaction data based on their work group performance, supervisors were provided data aggregated to state and regional levels. What their customers felt, or

reported, could have been masked by the way the data were presented.

Hypotheses One and Two. These two hypotheses, which concern the task structure of a job and customer satisfaction, received limited support in this dissertation. The full standardized data set revealed no relationship between time spent doing customer contact tasks and customer satisfaction (using either index of customer satisfaction; Hypothesis One). Time spent doing repair tasks was not related to customers' reports of their satisfaction but was related to supervisors' estimates of customer satisfaction ( $r = .25$ ; Hypothesis Two).

These data suggest that the way the job is done does not make a difference in customer satisfaction. Supervisors apparently believe--and believe erroneously--that the more time job incumbents spend doing repair tasks, the more their customers will be satisfied. These data, however, may not yield the best test of the hypotheses.

The less confounded data revealed a different pattern of results. The relationship between time spent doing customer contact tasks and customer satisfaction was supported using this data set. When incumbents reported spending more more time doing customer contact tasks, customers reported being more satisfied with the service they received. There was no relationship between time spent doing customer contact tasks and supervisory estimates of customer satisfaction, however.

These findings were reversed for Hypothesis Two. Time

spent doing repair tasks was not related to customer satisfaction, but it was related to supervisory estimates of customer satisfaction.

The pattern of the results obtained from the "best" data set suggests that there is a correspondence between the activities that job incumbents do and evaluations given by others (either customers or supervisors in this dissertation). When job incumbents spend time doing customer contact tasks, then customers report being more satisfied with the service received. When job incumbents spend time doing repair tasks, then supervisors estimate that customers are more satisfied with the service. That part of the job that customers experience, the performance of customer contact tasks, is related to their evaluations of the effectiveness of the work unit. This finding supports Gronroos' (1982) observation that what the customer sees is the service. On the other hand, that part of the job that supervisors seem to notice, the performance of repair tasks, is related to their evaluations of the effectiveness of the work unit. Much like Pfeffer and Salancik (1978) suggested, different constituents use different criteria when assessing work group effectiveness.

This data set supports the idea that the way the job is done does make a difference. Customers are more satisfied with the service they receive when job incumbents spend time telling them what will be done to restore their service, how long it will take, what alternatives are

available to them, who to contact, periodic progress reports, and the like. Alternatively, supervisors believe that when job incumbents spend more time doing repair tasks, then their work unit is providing better service to customers--that customers are more satisfied with the service they receive.

Hypotheses Three and Four. The two competing hypotheses--Hypotheses Three and Four--were not supported by either data set collected. Combining the two task facets in a linear multiple regression equation did not provide better prediction of either of the two indices of customer satisfaction (Hypothesis Three). Nor did the performance of repair tasks mediate the relationship between the performance of customer contact tasks and customer satisfaction (Hypothesis Four).

Hypotheses Five and Six. Except for the production subsystem, none of the work facilitation subsystems were related to either index of customer satisfaction in either data set. The production subsystem was positively related to supervisory estimates of customer satisfaction--but not customer reports--in both data sets. Consequently, Hypothesis Five was not supported by the data--the personnel work facilitation subsystem did not emerge as the leading subsystem.

These results are at odds with the earlier work described by Schoorman and Schneider, (1987). These researchers found no relationship between customer satisfaction and the production subsystem and positive relation-

ships between customer satisfaction and three other subsystems (personnel, supportive, and adaptive).

The production subsystem concerns the nature of the work that gets done in the work group. It deals with issues such as the characteristics of the work (e.g., incoming repair jobs that are similar to previous ones are distributed to the same job incumbent) and the time allocated to do it (e.g., overtime is required to meet the demands of the job; reverse scored). When job incumbents report that these types of practices are frequently followed, supervisors also estimate that customers will be satisfied with the service received.

Supervisory estimates of customer satisfaction are not a good proxy of customer reports, however. Again, it seems that when the production end of the business is being accomplished--job incumbents are spending their time doing repair tasks and policies related to doing the repairs are often followed--supervisors believe that their work unit is providing good customer service.

Hypothesis Six received limited support in this study. No relationships between the personnel work facilitation subsystem and the task structure of the job were revealed using the full standardized data set. However, once the analyses were done using the less confounded data set, a different picture emerged. The personnel work facilitation subsystem was positively, and significantly, related to the time job incumbents spend doing both custo-



mer contact tasks and repair tasks.

There is further evidence that the personnel work facilitation subsystem, in particular, plays a crucial role in the way the job gets done. This subsystem is more strongly related to the performance of customer contact tasks and the performance of repair tasks than any other subsystem. The results for the full standardized data set are marginal but the results for the two Division One jobs show this clearly. Only the correlations between the personnel work facilitation subsystem scale and the two task scales are statistically significant ( $r = .36$ ,  $p < .01$ , CONTACT, and  $r = .30$ ,  $p < .05$ , REPAIR). Table 13 presents the correlations between the two task scales and the six work facilitation scales.

These data support the notion that when capable people are hired and trained for these service jobs, and when they are rewarded for providing service, then the job incumbents also report doing more tasks (customer contact tasks) that lead to customer satisfaction. In addition, job incumbents are doing more tasks (repair tasks) that their supervisors believe will lead to customer satisfaction.

The model. The model was not supported by the data. One fatal flaw in the test of this model was that the personnel work facilitation subsystem was not related to either index of customer satisfaction. Whether or not the task structure of a job is a mediating factor of the relationship between work facilitation and organizational

Table 13: Correlations between the two task scales and the six work facilitation scales for both the full standardized data set and less confounded data set.

Full standardized data set, N = 61

	CONTACT	REPAIR
SUPPORT	-.06	-.05
ADAPT	.16	.12
PROD	-.07	-.12
EQMNT	-.05	-.23
MGRL	.05	.02
PERSONNL	.18	.18

For the less confounded data set, N = 49

	CONTACT	REPAIR
SUPPORT	.16	.11
ADAPT	.26	.17
PROD	.05	-.02
EQMNT	-.04	-.22
MGRL	.17	.11
PERSONNL	.36*	.30*

\*  $p < .05$

effectiveness could not adequately be tested by these data. The words of Masiarz (1986, p. 36), a microbiologist studying retro-viruses, explains this finding fairly well: "I've dealt with a lot of negative results in my day. You don't know if negative results means the effect doesn't exist, or that you've simply been unable to measure it in this situation."

### Conclusions.

Four customer service jobs were examined in this dissertation in an attempt to explore the relationships among the job, the setting in which the job is embedded, and work unit effectiveness. Task descriptions and work setting descriptions were first standardized within each job type (so the "same" job, or jobs described by the same set of task statements, were compared) and then combined. This standardized data set, plus a subset of this data, provided the empirical basis of this work.

The way the job is done may make a difference. In the less confounded data set, customers report being more satisfied with the service received when job incumbents spend time talking to them--explaining the problem, keeping them up-to-date with what is happening during the repair, and assisting them in performing their own routine maintenance checks. Doing these customer contact tasks, however, was not related to supervisory estimates of customer satisfaction.

When jobs are structured to allow for customer con-

tact tasks, then customers will be more satisfied. The "same" job (i.e., the same tasks are required of job incumbents) can also be different. Some types of tasks (such as customer contact tasks), may be emphasized and expected more often in some work groups than others. This difference in the structure of the same job seems to be related to work unit effectiveness.

While job incumbents spend time doing these customer contact tasks, they are not directly involved in production tasks (repairing, or restoring, the service), but customers report being more satisfied with the service received when these tasks are done. If the goals of the work group is to repair service and satisfy customers, sheer attention on repair tasks is not sufficient. This dissertation supports the notion that doing customer contact tasks is also important.

This dissertation also supports the notion that management is responsible for designing jobs. Job incumbents do the tasks that management expects, rewards, and supports. In service organizations, management has to develop a service orientation--establish the policies, practices, and procedures--that facilitates providing good customer service. The entire structure of the work unit needs to be set up to ensure that good service is the natural outcome, and not the exception.

As far as the design of jobs is concerned, this dissertation suggests that the personnel practices of manage-

ment are especially important. The practices that seem to ensure good service include: well-chosen and well-trained job incumbents who, in addition, are rewarded for performing customer contact tasks and who, consequently, know when they are doing the job as management wants it to be done.

In simplest terms, management is responsible for developing a service vision. To fulfill this vision, management must design jobs and establish other policies, practices, and procedures that allow good customer service to happen.

**APPENDIX A: Expanded summary of the climate-for-service research program on which this dissertation is based.**

The research by Peters, O'Connor and their colleagues (e.g., Peters & O'Connor, 1980; Peters, O'Connor & Ruldolf, 1980; O'Connor, Peters, Eulberg & Watson, 1984) guided the initial work of studying the influence of the setting on work performance. These researchers studied "situational performance constraints" which they defined as any aspect of the immediate work situation that acts to interfere with the use of individual motivation and abilities in performing various jobs. For their research they assumed that people are both willing and able to do their jobs but that they are inhibited or constrained from doing it. If managers were to act to remove the performance barriers, they surmised, then performance would improve. These researchers conducted both experimental and field studies in order to identify and categorize situational performance constraints.

One goal of the research program by Peters and O'Connor was to develop a taxonomy of situational performance constraints that would be sufficient to generalize to all organizations. They adopted an empirical approach to the classification of work constraints, conducting the following pieces of research:

- 1) They gathered descriptions of constraining work situations (through open-ended surveys and the critical incident technique).
- 2) They content analyzed these descriptions. In

other words, they sorted the constraints into categories of similar content. This sort initially yielded eight categories, but has since been expanded to include 14, and more, categories. The initial eight categories of constraints were: Job-related information, tools and equipment, materials and supplies, budgetary support, required services/help from others, task preparation, time availability, and the work environment. These categories are neither exhaustive nor mutually exclusive.

3) They then validated these categories using factor analytic techniques.

Despite their careful work, O'Connor et al. (1984), for example, failed to find support for the hypothesized relationship between situational constraints and individuals' performance. Among other things, they suggested that the constraints that they measured were not constraining enough to influence performance (Peters & O'Connor, 1986).

#### Conceptual contributions.

The work by Peters, O'Connor and their colleagues, however, suggested two new avenues of research. First, the work unit level of analysis, rather than the individual level, may be more appropriate for studying situational constraints. Second, a model that treats the construct of situational constraints in general theoretical terms was

needed. At one point in their research, Peters and O'Connor (1980) asked: Have we adequately assessed the dimensional space of the construct? This question is difficult to answer if your research is largely empirical.

The group level of analysis may be more appropriate for studying situational performance constraints. The literature on organizational (or departmental, or work group) climate (e.g., Schneider & Reichers, 1983) suggests that events and conditions of the situation would have relatively uniform effects on the people in a work setting. Schneider and Reichers (1983) argued that through the natural process of daily interaction, coworkers share common experiences in the workplace and they share their interpretations of these experiences. In this way, things that happen in a work setting diffuse to everyone in that setting. Consequently, situational effects should be fairly uniform.

The premise of this research program is, then, that there are facilitators and inhibitors of effectiveness, that they exist at the unit level, and that they have a significant impact on the performance of the unit. To lend confidence that the domain of facilitators and inhibitors would be adequately assessed, a conceptual framework for identifying and organizing potential facilitators and inhibitors was sought. Peters and O'Connor, and other literatures, suggested that issues of work facilitation range from characteristics of the task (Hackman & Oldham,



1980) to characteristics of the organization (Van de Ven, 1981), from policies and practices (Kerr & Jermier, 1978; Peters & O'Connor, 1980) to climate and culture (Likert, 1967; Schneider et al., 1979). A conceptual scheme was needed to help organize the growing list of potential facilitators and inhibitors. The search for such a framework led to the Katz and Kahn (1978) subsystem model of organizational functioning.

The Katz and Kahn (1978) subsystem model.

Open systems theory provides the foundation for the subsystem model. Nadler (1980, p. 122) called open system theory a perspective model:

This approach proposes a way of thinking about organizations (as open social systems) but does not inherently provide the researcher with specific applicable constructs or relationships that can easily be tested within the context of a particular assessment effort.

Katz and Kahn's generic subsystem model is a systems theory overlay, providing the "flesh and blood" for understanding the features of the organizational unit or, as in this case, capturing the domain of issues related to work facilitation.

Katz and Kahn (1978) proposed five generic subsystems which they believe characterize social organizations and which necessarily address the major issues of open systems; the cyclical input, transformation, and output activities.

Their model posits that effective functioning in these five subsystems is a necessary foundation for overall organisational effectiveness. Briefly, the five required subsystems are:

- 1) The production subsystem, which concerns the nature of the work that is done in the organization. This subsystem is exclusively concerned with the transformation process.
- 2) The supportive subsystem, which functions to obtain the raw materials needed for the production process and to dispose of the completed product. This subsystem concerns the the input and output activities of the organization.
- 3) The maintenance subsystem, which operates to ensure that the people and the equipment of the organization are capable of getting the work done. This subsystem concerns the input activities of the organization.
- 4) The adaptive subsystem, which monitors and responds to any environmental changes that might affect the production process. This subsystem marks the model as an "open" systems model and concerns the input and output activities of the organization. And finally,
- 5) The managerial subsystem, which directs, co-ordinates, and controls the various activities of the members of the organization. This subsystem is concerned with all of the activities of the

organization.

This theoretical model, delineating the "facts" of organizational functioning, was used to organize and clarify the assorted issues thought to facilitate or inhibit unit effectiveness.

Conducting this research at the unit level of analysis plus adapting a theoretical model to help map the domain of facilitators and inhibitors of work were the two conceptual contributions to the literature. These conceptual decisions, it turns out, also had consequence for the collection of the work facilitation data. The critical issue was, simply, how do you collect valid unit level data from a group of people?

#### Methodological contribution.

In the parent research program, two competing procedures were used to collect work facilitation information from individuals which were then used to reflect unit level information. After the Work Facilitation Diagnostic (WFD) survey was developed, it was administered in two ways. First, individuals' responses were collected (which were to be aggregated later) and then the work units' consensus response was collected from these same individuals.

The literature on intergroup theory (Alderfer & Brown, 1984) suggests that the consensus procedure may be more appropriate than the aggregation procedure for collecting unit level data. Collecting data via a consensus procedure does more than just implicitly aggregate individuals'

responses. Rather, it provides people an opportunity to share information when consensus is not immediate. Thus, they are able to resolve any initial disagreements and more accurately describe the facilitating and/or inhibiting conditions that they face on the job.

The literature on climate, however, suggests that the aggregation procedure is at least as good as the more elaborate consensus procedure. As stated earlier, the climate literature suggests that situational effects are fairly uniform; that people share common experiences and they share their interpretations of these experiences. Consequently, the expected initial disagreements that the consensus procedure is to alleviate would not occur.

#### Preliminary results.

Two service organizations were involved in the first studies conducted to test the model of work facilitation. One was a large mid-Atlantic University and the other was a Financial Services organization. In the first study, called the Teaching Effectiveness Study, 48 faculty from twelve departments of the University participated. In the second study, called the Work Facilitation Study, 81 telephone sales counselors from 15 work units participated.

A diagnostic survey (the Work Facilitation Diagnostic or WFD) was developed through a number of individual and group interviews with job incumbents. The theme of the interviews was, simply, "what helps and what hinders you in your work?" The interviewers took copious notes during

the interview and generated some 300 - 500 instances of work facilitation or work inhibition. These items were then sorted, by an iterative process, into the Katz and Kahn subsystem categories. This sort actually yielded six subsystems; the Maintenance subsystem was split into two scales: Personnel Maintenance and Equipment Maintenance. It was thought that this split would more adequately represent the importance of Human Resources activities in these two service organizations without jeopardizing the basic subsystem framework. In any case, a 35 item Teaching Effectiveness Diagnostic and a 40 item Work Facilitation Diagnostic were produced. The response format for both surveys was a five point frequency scale.

Effectiveness data were also collected. Student ratings of faculty performance in the classroom (aggregated to the department level) were the criterion data in the first study. "Hard" sales data (corresponding to the supervisory unit) served as the criterion data in the second study.

The results of these initial studies were very encouraging. Although internal consistency reliability estimates for the subsystem scale scores were low (ranging from .32 to .91 in the University sample and from .08 to .64 in the Financial Services sample), there was still evidence that the model is valid. In the University sample, most of the subsystem scales (all except for the Managerial one) were positively correlated with the cri-

terion. However, only the correlation between the Adaptive subsystem and the criterion reached conventional levels of significance ( $r = .62$ ,  $p < .01$ ). The Adaptive, Personnel Maintenance, and Equipment Maintenance subsystem scales did contain some items that were more highly, and in some cases significantly, correlated with the criterion.

The results for the Financial Services sample were even more encouraging. All of the subsystem scales were positively correlated with the criterion. In this case, three of the six subsystem scales (Supportive,  $r = .55$ ,  $p < .05$ ; Personnel Maintenance,  $r = .72$ ,  $p < .01$ ; and Adaptive,  $r = .56$ ,  $p < .05$ ) were significantly correlated with unit sales.

Analysis of the two methods of collecting WFD data was limited to the Financial Services sample. In this sample, the aggregated individual data and the consensus data were very similar. The corresponding subsystem scales (e.g., the Adaptive subsystem scale value calculated by both methods) were highly correlated, ranging from  $r = .80$  to  $r = .92$ . The results of the validity analyses told a similar story. Both the aggregated individual data and the consensus data were similarly correlated with the unit sale data, as described in the previous paragraph. The consensus data did, however, yield slightly higher validity coefficients than the aggregated individual data.

In sum, the WFD was developed, based on the Katz and Kahn subsystem model of organizational functioning, to assess the facilitating and inhibiting conditions at the

unit level of analysis. Two competing methods were used to collect the data: individuals' responses were aggregated to represent unit level information and unit consensus data was collected from the same individuals. The results of this research revealed the following: 1) the subsystem scale scores obtained fairly low internal consistency reliability estimates, 2) the two data collection procedures yielded fairly similar information, and 3) there is fairly promising evidence of validity of the model of work facilitation.

## **APPENDIX B: Letter to the supervisors**

**Dear Supervisor,**

We would like to thank you for the cooperation you have shown us as we collected the information for this survey. Now we are ready for the next phase of the project, the completion of the survey by you and the job incumbents you supervise.

We would like you to serve as a resource for the job incumbents. In order to do this we are asking you to look at the survey before giving it out to your subordinates. We have included detailed written directions and examples to help you and your subordinates fill out the survey correctly. Please read the directions carefully and if you have any questions do not hesitate to call us at one of the numbers listed below. If you do not reach us, please leave a return number and we will return your call.

After you feel confident that you understand all the directions, please give the enclosed surveys to your subordinates. Individuals are identified by code numbers on the survey. However, each survey is fronted by a name sheet which will allow you to give the right survey to the right person. We will use the code numbers to check off surveys that have been returned and to determine who wants a summary report of our findings. We sincerely appreciate your serving as a resource to answer your subordinates' questions. If an issue comes up that requires further explanation, do not hesitate to give us another call.



We not only need you to act as a resource person for your subordinates, but we need you to complete the survey too. You will notice that the survey directions are written for the job incumbents. We would like you to fill out the survey as if you were a job incumbent. If you supervise both Technicians and Clerks, we would like you to fill out the survey twice; once for the Technician job and once for the Clerk job.

In order to obtain everyone's survey back so we can begin the analysis of this information, please complete your survey by Friday, September 27th. It should take you approximately two sessions of 60 to 90 minutes each to complete the survey. We would also appreciate your arranging for job incumbents to complete the survey by the same date. Everyone should send the survey directly back to us in the self addressed, stamped envelope that we have included with each survey. This way, no one at [the Company] will see any individual's responses.

Sincerely,

APPENDIX C: Letter to the job incumbents.

Dear [Job Incumbent],

We would like to thank you for the cooperation you have shown us as we collected the information for this survey. Now we are ready for the next phase of the project. We need you, our job expert, to complete the survey.

The survey contains detailed written directions and examples. Please read the directions carefully. If you still do not understand what to do, ask your supervisor. Your supervisor has already read the survey and knows how to contact us.

You will notice that we don't ask for your name. Instead we identify surveys with code numbers. These code numbers will allow us to analyze survey responses by work groups. We will also use the code numbers to check off which surveys have been returned and to note who would like to have a copy of the report summarizing our analysis. In order for your supervisor to give you the right survey without having access to your code number, we have fronted each survey with a name sheet. Please destroy the name sheet after you receive your survey. We have also included a self addressed, stamped envelope. After you have completed the survey, slip it into the envelope and mail it directly to us. This way, no one at [the Company] will see your individual responses.

We want to thank you again for your time both in

helping us collect the information to design this survey and in filling out the survey itself. If you would like to receive a summary report of our analyses, just check the appropriate box on page four and we will be happy to send it to you. Please send your survey to us by Friday, September 27th.

Sincerely,

P.S. We were obliged to use the official job titles for each job throughout the survey. We hope the Agents, Reps, or anyone else for that matter, do not take offense at our use of these titles.

**Appendix D: Analyses of the four jobs, separately: ATECH, REP, CLERK, and BTECH.**

Table 14 presents the subsample sizes, scale means, standard deviations, intercorrelations, and coefficients alpha for the two task frequency scales (the customer contact tasks or CONTACT and the repair tasks or REPAIR), the personnel work facilitation scale (PERSONNL), and the two indices of customer satisfaction (supervisory ratings of the work unit's effectiveness in meeting the needs of its customers or SUPRATE and the data obtained from the customers or CUSSAT) for each job type.

Table 14 shows that job incumbents who report doing more customer contact tasks also report doing more repair tasks ( $r = .57$ , ATECH;  $.51$ , REP;  $.51$ , CLERK; and  $.71$ , BTECH;  $p < .05$ ). In addition, coefficients alpha for the two task frequency scales are high; \_\_ ranges from  $.57$  (REP, CONTACT) to  $.97$  (BTECH, CONTACT).

Table 14 also shows that the coefficients alpha for the personnel work facilitation scale as well as those for the two indices of customer satisfaction are high; \_\_ ranges from  $.58$  (REP, SUPRATE) TO  $.97$  (BTECH, CUSSAT).

The intercorrelations among the two task frequency scales, the personnel work facilitation scale, and the two indices of customer satisfaction are inconsistent across the four jobs. Contrary to the first and second hypotheses, Table 14 shows that the correlations between the two task frequency scales and SUPRATE are not significant. Except for the BTECH job, though, the correlations are positive.

TABLE 14: Means, standard deviations, and intercorrelations among the two task scales, the personnel work facilitation subsystem scale, and the two indices of customer satisfaction for each job type. (Coefficients alpha for each scale are provided in parentheses.)

JOB: ATECH, N = 33							JOB: REP, N = 9							
	MEAN	S.D.	1	2	3	4	5	MEAN	S.D.	1	2	3	4	
1. CONTACT	2.25	.38	(.92)					1.89	.11	(.57)				
2. REPAIR	2.58	.65	.57*(.96)					1.50	.20	.51*(.78)				
3. PERSONNL <sup>a</sup>	2.80	.51	.33* (.90)					3.12	.24	.48	.21	--		
4. SUPRATE <sup>b</sup>	2.51	.73	.08	.36	.30	(.84)		2.33	.78	.48	.50	-.01	(.58)	
5. CUSSAT	0.88	.04	.38	-.03	.08	.16 <sup>c</sup> (.93)	<sup>d</sup>	----	--	--	--	--	--	
JOB: CLERK, N = 9							JOB: BTECH, N = 10							
	MEAN	S.D.	1	2	3	4	5	MEAN	S.D.	1	2	3	4	5
1. CONTACT	2.03	.55	(.94)					2.23	.74	(.97)				
2. REPAIR	1.14	.73	.51*(.96)					1.84	.61	.71*(.92)				
3. PERSONNL <sup>c</sup>	3.16	.62	-.47	.18	(.90)			3.21	.34	.06	.10	(.66)		
4. SUPRATE <sup>c</sup>	2.25	.84	.30	.43	.22	(.65)		1.98	.79	-.16	-.22	.41	(.64)	
5. CUSSAT <sup>a</sup>	0.85	.04	-.64* <sup>b</sup>	-.47 <sup>d</sup>	.47	-.62 <sup>d</sup> (.96)	.05	0.86	.05	.20	.17	-.03	-.17	(.97) <sup>d</sup>
N = 26   N = 14   N = 6   month-to-month stability estimates														

<sup>a</sup> N = 26   <sup>b</sup> N = 14   <sup>c</sup> N = 6   month-to-month stability estimates

<sup>e</sup> these data are missing

The correlations between the two task frequency scales and CUSSAT also show mixed results. The correlations are both positive (but nonsignificant) and negative. The one significant correlation between CONTACT and CUSSAT is negative ( $r = -.64, p < .05$ ; CLERK).

In partial support of the fifth hypothesis, Table 14 shows that PERSONNL is positively related to the two task frequency scales ( $r = .33, p < .05$  for both CONTACT and REPAIR). However, this relationship is supported only by the data collected from the ATECH job incumbents.

Finally, Table 14 also shows that the correlations between the two indices of customer satisfaction, SUPRATE and CUSSAT, are not significant. The supervisors' ratings of their unit's effectiveness in meeting their customers' needs are not related to the customers' ratings of their satisfaction with the service that they received from the work unit.

Table 15 presents the multiple regression analysis using the two task scales as the predictor variables and, in separate equations, the two indices of customer satisfaction for each job type. Contrary to Hypothesis Three, none of the F ratios are significant at  $p < .05$ .

Table 16 presents the coefficient estimates of within-group interrater reliability (James et al., 1984) for the two task frequency scales and the personnel work facilitation scale. Estimating within-group interrater reliability may produce spurious results if too few raters provide information. Therefore, only those work units in which at



Table 16: Within-group interrater reliability estimates for the scales CONTACT, REPAIR, and PERSONNL for each work unit that had six or more job incumbents responding to the survey.

JOB: ATECH, 5 work units				JOB: REP, 8 work units			
N	CONTACT	REPAIR	PERSONNL	N	CONTACT	REPAIR	PERSONNL
6	.97	.93	.91	10	.94	.92	.84
6	.92	.60	.90	10	.93	.91	.91
7	.97	.89	.75	8	.89	.91	.90
7	.87	.72	.82	9	.93	.95	.85
6	.98	.94	.80	6	.95	.37	.89
MEAN	.94	.82	.84	8	.94	.96	.83
JOB: CLERK, 4 work units				6	.97	.95	.80
9	.92	.11	.94	8	.94	.82	.86
9	.89	.85	.93	MEAN	.94	.82	.86
7	.17	.88	.91	JOB: BTECH, 1 work unit			
7	.48	.16	.82	8	.89	.90	.93
MEAN	.62	.50	.90				



least six incumbents provided information were used in this analysis. Presumably, the results from these work units are representative of the remaining work units.

This Table shows that, in general, job incumbents agree with the other members in their work units when asked to describe their job and to describe management's personnel policies, practices and procedures. Only six of the 57 estimates presented (10%) are less than .60. Most of the low estimates (4) are found for the CLERK job. The CLERK incumbents agreed less when asked to describe how frequently they performed the tasks of their job than any other group of job incumbents.

## NOTES

1. Lewin rejected the then prevailing notion of immutable personality traits (e.g., Cattell, 1950). He proposed that a person's behavior at any given moment is determined by his/her "life space." The life space includes both the person (P) and his/her psychological environment (E). In addition, he argued that the boundaries between the person and the psychological environment are permeable; that is, they are capable of mutual influence. In other words, a person's environment does not merely serve to facilitate tendencies that are permanently established in his or her nature. As a result of dynamic forces, psychological reality is always changing and, thus, so too is one's life space.

2. T.R. Mitchell. (1985) University of Washington, personal communication.

3. In a similar fashion, researchers use Lewin's general formulation, that  $B = f(P, E)$ , to study more specific hypotheses about individuals' behavior. Endler and Hunt (1969), for example, identified particular personality traits (e.g., anxiousness) and particular characteristics of situations (e.g., innocuous, threatening) in order to more accurately explain and predict particular behaviors. Likewise, certain features of the job and certain characteristics of the setting may be identified and used to explain customer satisfaction.

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